

SEQUENCE LISTING

<110> Frohberg, Claus
Koetting, Oliver

Ritte, Gerhard
Steup, Martin

<120> Plants with increased activity of multiple starch phosphorylating enzymes

<130> 65084.000022

<140> Unassigned
<141> 2006-09-01

<150> EP 04090089.6

<151> 2004-03-05

<150> US 60/550,021

<151> 2004-03-05

<150> EP 04090284.3

<151> 2004-07-21

<150> EP 04090121.7

<151> 2004-03-29

<160> 39

<170> PatentIn version 3.1

<210> 1

<211> 3591

<212> DNA

<213> *Arabidopsis thaliana*

<220>

<221> CDS

<222> (1)..(3591)

<223>

<400>	1		48
atg gag agc att ggc agc cat tgt tgc agc tct cct ttc acc ttc atc			
Met Glu Ser Ile Gly Ser His Cys Cys Ser Ser Pro Phe Thr Phe Ile			
1 5 10 15			
act aga aac tca tca tca ctt cct aga ctc gtt aac atc act cac			96
Thr Arg Asn Ser Ser Ser Leu Pro Arg Leu Val Asn Ile Thr His			
20 25 30			
aga gtt aat ctc agc cac caa tct cac cga ctc aga aac tcc aat tct			144
Arg Val Asn Leu Ser His Gln Ser His Arg Leu Arg Asn Ser Asn Ser			
35 40 45			
cgt ctc act tgc act gct act tct tct tcc acc att gag gaa caa cgg			192
Arg Leu Thr Cys Thr Ala Thr Ser Ser Ser Thr Ile Glu Glu Gln Arg			
50 55 60			
aag aag aaa gat gga tca gga acg aaa gtc agg ttg aat gtc agg tta			240
Lys Lys Lys Asp Gly Ser Gly Thr Lys Val Arg Leu Asn Val Arg Leu			
65 70 75 80			
gat cat caa gtt aat ttt ggt gac cat gtc gct atg ttt gga tca gct			288
Asp His Gln Val Asn Phe Gly Asp His Val Ala Met Phe Gly Ser Ala			
85 90 95			
aaa gag att ggt tca tgg aaa aag aaa tcg cct ttg aat tgg agt gag			336
Lys Glu Ile Gly Ser Trp Lys Lys Ser Pro Leu Asn Trp Ser Glu			
100 105 110			
aat gga tgg gtt tgt gag ttg gaa ctt gac ggt ggt cag gtt ttg gag			384
Asn Gly Trp Val Cys Glu Leu Glu Leu Asp Gly Gly Gln Val Leu Glu			
115 120 125			
tat aag ttt gtc att gtt aag aat gat ggt tca ctt tca tgg gaa tct			432
Tyr Lys Phe Val Ile Val Lys Asn Asp Gly Ser Leu Ser Trp Glu Ser			
130 135 140			
ggt gat aat cgt gtc ctt aag gtt cca aat tct ggg aat ttt tct gtt			480
Gly Asp Asn Arg Val Leu Lys Val Pro Asn Ser Gly Asn Phe Ser Val			
145 150 155 160			
gtt tgt cat tgg gat gct act aga gaa acc ctt gat ttg cct cag gag			528
Val Cys His Trp Asp Ala Thr Arg Glu Thr Leu Asp Leu Pro Gln Glu			
165 170 175			
gtt ggt aat gat gat gat gtt ggt gat ggt ggg cat gag agg gat aat			576
Val Gly Asn Asp Asp Asp Val Gly Asp Gly Gly His Glu Arg Asp Asn			
180 185 190			
cat gat gtt ggt gat gat aga gta gtc gga agt gaa aat ggt gcg cag			624
His Asp Val Gly Asp Asp Arg Val Val Gly Ser Glu Asn Gly Ala Gln			
195 200 205			

ctt cag aag agt aca ttg ggt ggg caa tgg caa ggt aaa gat gcg tcc Leu Gln Lys Ser Thr Leu Gly Gly Gln Trp Gln Gly Lys Asp Ala Ser 210 215 220	672
ttt atg cgt tct aat gat cat ggt aac aga gaa gtt ggt aga aat tgg Phe Met Arg Ser Asn Asp His Gly Asn Arg Glu Val Gly Arg Asn Trp 225 230 235 240	720
gat act agt ggt ctt gaa ggc aca gct ctt aag atg gtt gag ggt gat Asp Thr Ser Gly Leu Glu Gly Thr Ala Leu Lys Met Val Glu Gly Asp 245 250 255	768
cgc aac tct aag aac tgg tgg aga aag ctt gaa atg gta cgc gag gtt Arg Asn Ser Lys Asn Trp Trp Arg Lys Leu Glu Met Val Arg Glu Val 260 265 270	816
ata gtt ggg agt gtt gag agg gag gaa cga ttg aag gcg ctc ata tac Ile Val Gly Ser Val Glu Arg Glu Arg Leu Lys Ala Leu Ile Tyr 275 280 285	864
tct gca att tat ttg aag tgg ata aac aca ggt cag att cct tgt ttt Ser Ala Ile Tyr Leu Lys Trp Ile Asn Thr Gly Gln Ile Pro Cys Phe 290 295 300	912
gaa gat gga ggg cat cac cgt cca aac agg cat gcc gag att tcc aga Glu Asp Gly Gly His His Arg Pro Asn Arg His Ala Glu Ile Ser Arg 305 310 315 320	960
ctt ata ttc cgt gag ttg gag cac att tgc agt aag aaa gat gct act Leu Ile Phe Arg Glu Leu Glu His Ile Cys Ser Lys Lys Asp Ala Thr 325 330 335	1008
cca gag gaa gtg ctt gtt gct cg ^g aaa atc cat cc ^g tgt tta cct tct Pro Glu Glu Val Leu Val Ala Arg Lys Ile His Pro Cys Leu Pro Ser 340 345 350	1056
ttc aaa gca gag ttt act gca gct gtc cct cta act cg ^g att agg gac Phe Lys Ala Glu Phe Thr Ala Ala Val Pro Leu Thr Arg Ile Arg Asp 355 360 365	1104
ata gcc cat cg ^g aat gat att cct cat gat ctc aag caa gaa atc aag Ile Ala His Arg Asn Asp Ile Pro His Asp Leu Lys Gln Glu Ile Lys 370 375 380	1152
cat acg ata caa aat aag ctt cac cg ^g aat gct ggt cca gaa gat cta His Thr Ile Gln Asn Lys Leu His Arg Asn Ala Gly Pro Glu Asp Leu 385 390 395 400	1200
att gca aca gaa gca atg ctt caa cg ^g att acc gag acc cca gga aaa Ile Ala Thr Glu Ala Met Leu Gln Arg Ile Thr Glu Thr Pro Gly Lys 405 410 415	1248
tat agt gga gac ttt gtg gag cg ^g ttt aaa ata ttc cat aat gag ctt Tyr Ser Gly Asp Phe Val Glu Gln Phe Lys Ile Phe His Asn Glu Leu 420 425 430	1296
aaa gat ttc ttt aat gct gga agt ctc act gaa cag ctt gat tct atg Lys Asp Phe Phe Asn Ala Gly Ser Leu Thr Glu Gln Leu Asp Ser Met 435 440 445	1344
aaa att tct atg gat gat aga ggt ctt tct gc ^g ctc aat ttg ttt ttt Lys Ile Ser Met Asp Asp Arg Gly Leu Ser Ala Leu Asn Leu Phe Phe 450 455 460	1392

gaa tgt aaa aag cgc ctt gac aca tca gga gaa tca agc aat gtt ttg Glu Cys Lys Lys Arg Leu Asp Thr Ser Gly Glu Ser Ser Asn Val Leu 465 470 475 480	1440
gag ttg att aaa acc atg cat tct cta gct tct tta aga gaa aca att Glu Leu Ile Lys Thr Met His Ser Leu Ala Ser Leu Arg Glu Thr Ile 485 490 495	1488
ata aag gaa ctt aat agc ggc ttg cga aat gat gct cct gat act gcc Ile Lys Glu Leu Asn Ser Gly Leu Arg Asn Asp Ala Pro Asp Thr Ala 500 505 510	1536
att gca atg cgc cag aag tgg cgc ctt tgt gag atc ggc ctc gag gac Ile Ala Met Arg Gln Lys Trp Arg Leu Cys Glu Ile Gly Leu Glu Asp 515 520 525	1584
tac ttt ttt gtt cta cta agc aga ttc ctc aat gct ctt gaa act atg Tyr Phe Phe Val Leu Leu Ser Arg Phe Leu Asn Ala Leu Glu Thr Met 530 535 540	1632
gga gga gct gat caa ctg gca aaa gat gtg gga tca aga aac gtt gcc Gly Gly Ala Asp Gln Leu Ala Lys Asp Val Gly Ser Arg Asn Val Ala 545 550 555 560	1680
tca tgg aat gat cca cta gat gct ttg gtg ttg ggt gtt cac caa gta Ser Trp Asn Asp Pro Leu Asp Ala Leu Val Leu Gly Val His Gln Val 565 570 575	1728
ggt cta tct ggt tgg aag caa gaa gaa tgt tta gcc att gga aat gaa Gly Leu Ser Gly Trp Lys Gln Glu Glu Cys Leu Ala Ile Gly Asn Glu 580 585 590	1776
ctc ctt gct tgg cga gaa agg gac cta ctt gaa aaa gaa ggg gaa gag Leu Leu Ala Trp Arg Glu Arg Asp Leu Leu Glu Lys Glu Gly Glu Glu 595 600 605	1824
gat gga aaa aca att tgg gcc atg agg ctg aaa gca act ctt gat cga Asp Gly Lys Thr Ile Trp Ala Met Arg Leu Lys Ala Thr Leu Asp Arg 610 615 620	1872
gca cgc aga tta aca gca gaa tat tct gat ttg ctt ctt caa ata ttt Ala Arg Arg Leu Thr Ala Glu Tyr Ser Asp Leu Leu Leu Gln Ile Phe 625 630 635 640	1920
cct cct aat gtg gag att tta gga aaa gct cta gga att cca gag aat Pro Pro Asn Val Glu Ile Leu Gly Lys Ala Leu Gly Ile Pro Glu Asn 645 650 655	1968
agt gtc aag acc tat aca gaa gca gag att cgt gct gga att att ttc Ser Val Lys Thr Tyr Thr Glu Ala Glu Ile Arg Ala Gly Ile Ile Phe 660 665 670	2016
cag atc tca aag ctc tgc act gtt ctt cta aaa gct gta aga aat tca Gln Ile Ser Lys Leu Cys Thr Val Leu Leu Lys Ala Val Arg Asn Ser 675 680 685	2064
ctt ggt tct gag ggc tgg gat gtc gtt gta cct gga tcg acg tct ggg Leu Gly Ser Glu Gly Trp Asp Val Val Val Pro Gly Ser Thr Ser Gly 690 695 700	2112
aca tta gtt cag gtt gag agc att gtt ccg gga tca ttg cca gca act Thr Leu Val Gln Val Glu Ser Ile Val Pro Gly Ser Leu Pro Ala Thr 705 710 715 720	2160

tct ggt ggt cct att att ctc ttg gtc aat aaa gct gat ggc gat gaa Ser Gly Gly Pro Ile Ile Leu Leu Val Asn Lys Ala Asp Gly Asp Glu 725 730 735	2208
gag gta agt gct gct aat ggg aac ata gct gga gtc atg ctt ctg cag Glu Val Ser Ala Ala Asn Gly Asn Ile Ala Gly Val Met Leu Leu Gln 740 745 750	2256
gag ctg cct cac ttg tct cac ctt ggc gtt aga gcg cgg cag gag aaa Glu Leu Pro His Leu Ser His Leu Gly Val Arg Ala Arg Gln Glu Lys 755 760 765	2304
att gtc ttt gtg aca tgt gat gat gac aag gtt gct gat ata cga Ile Val Phe Val Thr Cys Asp Asp Asp Asp Lys Val Ala Asp Ile Arg 770 775 780	2352
cga ctt gtg gga aaa ttt gtg agg ttg gaa gca tct cca agt cat gtg Arg Leu Val Gly Lys Phe Val Arg Leu Glu Ala Ser Pro Ser His Val 785 790 795 800	2400
aat ctg ata ctt tca act gag ggt agg agt cgc act tcc aaa tcc agt Asn Leu Ile Leu Ser Thr Glu Gly Arg Ser Arg Thr Ser Lys Ser Ser 805 810 815	2448
gcg acc aaa aaa acg gat aag aac agc tta tct aag aaa aaa aca gat Ala Thr Lys Lys Thr Asp Lys Asn Ser Leu Ser Lys Lys Lys Thr Asp 820 825 830	2496
aag aag agc tta tct atc gat gat gaa gaa tca aag cct ggt tcc tca Lys Lys Ser Leu Ser Ile Asp Asp Glu Glu Ser Lys Pro Gly Ser Ser 835 840 845	2544
tct tcc aat agc ctc ctt tac tct tcc aag gat atc cct agt gga gga Ser Ser Asn Ser Leu Leu Tyr Ser Ser Lys Asp Ile Pro Ser Gly Gly 850 855 860	2592
atc ata gca ctt gct gat gca gat gta cca act tct ggt tca aaa tct Ile Ile Ala Leu Ala Asp Ala Asp Val Pro Thr Ser Gly Ser Lys Ser 865 870 875 880	2640
gct gca tgt ggt ctt ctt gca tct tta gca gaa gcc tct agt aaa gtg Ala Ala Cys Gly Leu Leu Ala Ser Leu Ala Glu Ala Ser Ser Lys Val 885 890 895	2688
cac agc gaa cac gga gtt ccg gca tca ttt aag gtt cca act gga gtt His Ser Glu His Gly Val Pro Ala Ser Phe Lys Val Pro Thr Gly Val 900 905 910	2736
gtc ata cct ttt gga tcg atg gaa tta gct tta aag caa aat aat tcg Val Ile Pro Phe Gly Ser Met Glu Leu Ala Leu Lys Gln Asn Asn Ser 915 920 925	2784
gaa gaa aag ttt gcg tct ttg cta gaa aaa cta gaa acc gcc aga cct Glu Glu Lys Phe Ala Ser Leu Leu Glu Lys Leu Glu Thr Ala Arg Pro 930 935 940	2832
gag ggt ggt gag cta gac gac ata tgt gac cag atc cat gaa gtg atg Glu Gly Gly Glu Leu Asp Asp Ile Cys Asp Gln Ile His Glu Val Met 945 950 955 960	2880
aaa acg ttg caa gtg cct aaa gaa aca atc aac agc ata agc aaa gcg Lys Thr Leu Gln Val Pro Lys Glu Thr Ile Asn Ser Ile Ser Lys Ala 965 970 975	2928

ttt ctc aaa gat gct cgt ctc att gtt cgt tca agt gct aac gtc gag	2976
Phe Leu Lys Asp Ala Arg Leu Ile Val Arg Ser Ser Ala Asn Val Glu	
980 985 990	
gac tta gcc gga atg tca gct gca gga ctc tat gaa tca atc cct aac	3024
Asp Leu Ala Gly Met Ser Ala Ala Gly Leu Tyr Glu Ser Ile Pro Asn	
995 1000 1005	
gtg agt ccc tcg gat cct ttg gtg ttt tca gat tcg gtt tgc caa	3069
Val Ser Pro Ser Asp Pro Leu Val Phe Ser Asp Ser Val Cys Gln	
1010 1015 1020	
gtt tgg gct tct ctc tac aca aga aga gct gtt cta agc cgt aga	3114
Val Trp Ala Ser Leu Tyr Thr Arg Arg Ala Val Leu Ser Arg Arg	
1025 1030 1035	
gct gct ggt gtc tct caa aga gaa gct tca atg gct gtt ctc gtt	3159
Ala Ala Gly Val Ser Gln Arg Glu Ala Ser Met Ala Val Leu Val	
1040 1045 1050	
caa gaa atg ctt tcg ccg gac tta tca ttc gtt ctg cac aca gtg	3204
Gln Glu Met Leu Ser Pro Asp Leu Ser Phe Val Leu His Thr Val	
1055 1060 1065	
agt cca gct gat ccg gac agt aac ctt gtg gaa gcc gag atc gct	3249
Ser Pro Ala Asp Pro Asp Ser Asn Leu Val Glu Ala Glu Ile Ala	
1070 1075 1080	
cct ggt tta ggt gag act tta gct tca gga aca aga gga aca cca	3294
Pro Gly Leu Gly Glu Thr Leu Ala Ser Gly Thr Arg Gly Thr Pro	
1085 1090 1095	
tgg aga ctc gct tcg ggt aag ctc gac ggg att gta caa acc tta	3339
Trp Arg Leu Ala Ser Gly Lys Leu Asp Gly Ile Val Gln Thr Leu	
1100 1105 1110	
gct ttc gca aac ttc agc gaa gag ctt ctt gtg tca gga aca ggt	3384
Ala Phe Ala Asn Phe Ser Glu Glu Leu Leu Val Ser Gly Thr Gly	
1115 1120 1125	
cct gct gat gga aaa tac gtt cgg ttg acc gtg gac tat agc aaa	3429
Pro Ala Asp Gly Lys Tyr Val Arg Leu Thr Val Asp Tyr Ser Lys	
1130 1135 1140	
aaa cgt tta act gtt gac tcg gtg ttt aga cag cag ctc ggt cag	3474
Lys Arg Leu Thr Val Asp Ser Val Phe Arg Gln Gln Leu Gly Gln	
1145 1150 1155	
aga ctc ggt tcg gtt ggt ttc ttc ttg gaa aga aac ttt ggc tgt	3519
Arg Leu Gly Ser Val Gly Phe Asn Phe Leu Glu Arg Asn Phe Gly Cys	
1160 1165 1170	
gct caa gac gtt gaa ggt tgt ttg gtt ggt gaa gat gtt tac att	3564
Ala Gln Asp Val Glu Gly Cys Leu Val Gly Glu Asp Val Tyr Ile	
1175 1180 1185	
gtt cag tca agg cca caa cct ctg tag	3591
Val Gln Ser Arg Pro Gln Pro Leu	
1190 1195	

<210> 2

<211> 1196

<212> PRT

<213> *Arabidopsis thaliana*

<400> 2

Met Glu Ser Ile Gly Ser His Cys Cys Ser Ser Pro Phe Thr Phe Ile
1 5 10 15

Thr Arg Asn Ser Ser Ser Leu Pro Arg Leu Val Asn Ile Thr His
20 25 30

Arg Val Asn Leu Ser His Gln Ser His Arg Leu Arg Asn Ser Asn Ser
35 40 45

Arg Leu Thr Cys Thr Ala Thr Ser Ser Ser Thr Ile Glu Glu Gln Arg
50 55 60

Lys Lys Lys Asp Gly Ser Gly Thr Lys Val Arg Leu Asn Val Arg Leu
65 70 75 80

Asp His Gln Val Asn Phe Gly Asp His Val Ala Met Phe Gly Ser Ala
85 90 95

Lys Glu Ile Gly Ser Trp Lys Lys Ser Pro Leu Asn Trp Ser Glu
100 105 110

Asn Gly Trp Val Cys Glu Leu Glu Leu Asp Gly Gly Gln Val Leu Glu
115 120 125

Tyr Lys Phe Val Ile Val Lys Asn Asp Gly Ser Leu Ser Trp Glu Ser
130 135 140

Gly Asp Asn Arg Val Leu Lys Val Pro Asn Ser Gly Asn Phe Ser Val
145 150 155 160

Val Cys His Trp Asp Ala Thr Arg Glu Thr Leu Asp Leu Pro Gln Glu
165 170 175

Val Gly Asn Asp Asp Asp Val Gly Asp Gly Gly His Glu Arg Asp Asn
180 185 190

His Asp Val Gly Asp Asp Arg Val Val Gly Ser Glu Asn Gly Ala Gln
195 200 205

Leu Gln Lys Ser Thr Leu Gly Gly Gln Trp Gln Gly Lys Asp Ala Ser
210 215 220

Phe Met Arg Ser Asn Asp His Gly Asn Arg Glu Val Gly Arg Asn Trp
225 230 235 240

Asp Thr Ser Gly Leu Glu Gly Thr Ala Leu Lys Met Val Glu Gly Asp
245 250 255

Arg Asn Ser Lys Asn Trp Trp Arg Lys Leu Glu Met Val Arg Glu Val
260 265 270

Ile Val Gly Ser Val Glu Arg Glu Glu Arg Leu Lys Ala Leu Ile Tyr
275 280 285

Ser Ala Ile Tyr Leu Lys Trp Ile Asn Thr Gly Gln Ile Pro Cys Phe
290 295 300

Glu Asp Gly Gly His His Arg Pro Asn Arg His Ala Glu Ile Ser Arg
305 310 315 320

Leu Ile Phe Arg Glu Leu Glu His Ile Cys Ser Lys Lys Asp Ala Thr
325 330 335

Pro Glu Glu Val Leu Val Ala Arg Lys Ile His Pro Cys Leu Pro Ser
340 345 350

Phe Lys Ala Glu Phe Thr Ala Ala Val Pro Leu Thr Arg Ile Arg Asp
355 360 365

Ile Ala His Arg Asn Asp Ile Pro His Asp Leu Lys Gln Glu Ile Lys
370 375 380

His Thr Ile Gln Asn Lys Leu His Arg Asn Ala Gly Pro Glu Asp Leu
385 390 395 400

Ile Ala Thr Glu Ala Met Leu Gln Arg Ile Thr Glu Thr Pro Gly Lys
405 410 415

Tyr Ser Gly Asp Phe Val Glu Gln Phe Lys Ile Phe His Asn Glu Leu
420 425 430

Lys Asp Phe Phe Asn Ala Gly Ser Leu Thr Glu Gln Leu Asp Ser Met
435 440 445

Lys Ile Ser Met Asp Asp Arg Gly Leu Ser Ala Leu Asn Leu Phe Phe
450 455 460

Glu Cys Lys Lys Arg Leu Asp Thr Ser Gly Glu Ser Ser Asn Val Leu
465 470 475 480

Glu Leu Ile Lys Thr Met His Ser Leu Ala Ser Leu Arg Glu Thr Ile
485 490 495

Ile Lys Glu Leu Asn Ser Gly Leu Arg Asn Asp Ala Pro Asp Thr Ala
500 505 510

Ile Ala Met Arg Gln Lys Trp Arg Leu Cys Glu Ile Gly Leu Glu Asp
515 520 525

Tyr Phe Phe Val Leu Leu Ser Arg Phe Leu Asn Ala Leu Glu Thr Met
530 535 540

Gly Gly Ala Asp Gln Leu Ala Lys Asp Val Gly Ser Arg Asn Val Ala
545 550 555 560

Ser Trp Asn Asp Pro Leu Asp Ala Leu Val Leu Gly Val His Gln Val
565 570 575

Gly Leu Ser Gly Trp Lys Gln Glu Glu Cys Leu Ala Ile Gly Asn Glu
580 585 590

Leu Leu Ala Trp Arg Glu Arg Asp Leu Leu Glu Lys Glu Gly Glu Glu
595 600 605

Asp Gly Lys Thr Ile Trp Ala Met Arg Leu Lys Ala Thr Leu Asp Arg
610 615 620

Ala Arg Arg Leu Thr Ala Glu Tyr Ser Asp Leu Leu Leu Gln Ile Phe
625 630 635 640

Pro Pro Asn Val Glu Ile Leu Gly Lys Ala Leu Gly Ile Pro Glu Asn
645 650 655

Ser Val Lys Thr Tyr Thr Glu Ala Glu Ile Arg Ala Gly Ile Ile Phe
660 665 670

Gln Ile Ser Lys Leu Cys Thr Val Leu Leu Lys Ala Val Arg Asn Ser
675 680 685

Leu Gly Ser Glu Gly Trp Asp Val Val Val Pro Gly Ser Thr Ser Gly
690 695 700

Thr Leu Val Gln Val Glu Ser Ile Val Pro Gly Ser Leu Pro Ala Thr
705 710 715 720

Ser Gly Gly Pro Ile Ile Leu Leu Val Asn Lys Ala Asp Gly Asp Glu
725 730 735

Glu Val Ser Ala Ala Asn Gly Asn Ile Ala Gly Val Met Leu Leu Gln
740 745 750

Glu Leu Pro His Leu Ser His Leu Gly Val Arg Ala Arg Gln Glu Lys
755 760 765

Ile Val Phe Val Thr Cys Asp Asp Asp Lys Val Ala Asp Ile Arg
770 775 780

Arg Leu Val Gly Lys Phe Val Arg Leu Glu Ala Ser Pro Ser His Val
785 790 795 800

Asn Leu Ile Leu Ser Thr Glu Gly Arg Ser Arg Thr Ser Lys Ser Ser
805 810 815

Ala Thr Lys Lys Thr Asp Lys Asn Ser Leu Ser Lys Lys Thr Asp
820 825 830

Lys Lys Ser Leu Ser Ile Asp Asp Glu Glu Ser Lys Pro Gly Ser Ser
835 840 845

Ser Ser Asn Ser Leu Leu Tyr Ser Ser Lys Asp Ile Pro Ser Gly Gly
850 855 860

Ile Ile Ala Leu Ala Asp Ala Asp Val Pro Thr Ser Gly Ser Lys Ser
865 870 875 880

Ala Ala Cys Gly Leu Leu Ala Ser Leu Ala Glu Ala Ser Ser Lys Val
885 890 895

His Ser Glu His Gly Val Pro Ala Ser Phe Lys Val Pro Thr Gly Val
900 905 910

Val Ile Pro Phe Gly Ser Met Glu Leu Ala Leu Lys Gln Asn Asn Ser
915 920 925

Glu Glu Lys Phe Ala Ser Leu Leu Glu Lys Leu Glu Thr Ala Arg Pro
930 935 940

Glu Gly Gly Glu Leu Asp Asp Ile Cys Asp Gln Ile His Glu Val Met
945 950 955 960

Lys Thr Leu Gln Val Pro Lys Glu Thr Ile Asn Ser Ile Ser Lys Ala
965 970 975

Phe Leu Lys Asp Ala Arg Leu Ile Val Arg Ser Ser Ala Asn Val Glu
980 985 990

Asp Leu Ala Gly Met Ser Ala Ala Gly Leu Tyr Glu Ser Ile Pro Asn
995 1000 1005

Val Ser Pro Ser Asp Pro Leu Val Phe Ser Asp Ser Val Cys Gln
1010 1015 1020

Val Trp Ala Ser Leu Tyr Thr Arg Arg Ala Val Leu Ser Arg Arg
1025 1030 1035

Ala Ala Gly Val Ser Gln Arg Glu Ala Ser Met Ala Val Leu Val
1040 1045 1050

Gln Glu Met Leu Ser Pro Asp Leu Ser Phe Val Leu His Thr Val
1055 1060 1065

Ser Pro Ala Asp Pro Asp Ser Asn Leu Val Glu Ala Glu Ile Ala
1070 1075 1080

Pro Gly Leu Gly Glu Thr Leu Ala Ser Gly Thr Arg Gly Thr Pro
1085 1090 1095

Trp Arg Leu Ala Ser Gly Lys Leu Asp Gly Ile Val Gln Thr Leu
1100 1105 1110

Ala Phe Ala Asn Phe Ser Glu Glu Leu Leu Val Ser Gly Thr Gly
1115 1120 1125

Pro Ala Asp Gly Lys Tyr Val Arg Leu Thr Val Asp Tyr Ser Lys
1130 1135 1140

Lys Arg Leu Thr Val Asp Ser Val Phe Arg Gln Gln Leu Gly Gln
1145 1150 1155

Arg Leu Gly Ser Val Gly Phe Phe Leu Glu Arg Asn Phe Gly Cys
1160 1165 1170

Ala Gln Asp Val Glu Gly Cys Leu Val Gly Glu Asp Val Tyr Ile
1175 1180 1185

Val Gln Ser Arg Pro Gln Pro Leu
1190 1195

<210> 3

<211> 3644

<212> DNA

<213> Oryza sativa

<220>

<221> CDS

<222> (13)..(3633)

<223>

<400>	3															
cgaggaggat	ca	atg	acg	tcg	ctg	cg	ccc	ctc	gaa	acc	tcg	ctc	tcc	ata	51	
		Met	Thr	Ser	Leu	Arg	Pro	Leu	Glu	Thr	Ser	Leu	Ser	Ile		
	1			5						10						
ggc	ggc	agg	ccg	cgc	cgt	ggt	ctc	gtc	ctc	ccg	ccg	ccc	gga	gtc	ggt	99
Gly	Gly	Arg	Pro	Arg	Arg	Gly	Leu	Val	Leu	Pro	Pro	Pro	Gly	Val	Gly	
	15			20						25						
g	c	g	g	t	g	t	c	t	c	c	c	g	g	c	c	147
Ala	Gly	Val	Leu	Leu	Arg	Arg	Gly	Ala	Met	Ala	Leu	Pro	Gly	Arg	Arg	
	30			35					40					45		
g	g	t	c	t	g	c	c	g	g	c	g	c	t	g	c	195
Gly	Phe	Ala	Cys	Arg	Gly	Arg	Ser	Ala	Ala	Ser	Ala	Ala	Glu	Arg	Thr	
	50			55					60							
a	a	g	g	a	a	g	a	g	t	c	a	c	t	t	cat	243
Lys	Glu	Lys	Lys	Arg	Arg	Asp	Ser	Ser	Lys	Gln	Pro	Leu	Val	His	Ile	
	65			70					75							
c	a	g	t	t	g	t	c	a	g	t	t	g	t	g	att	291
Gln	Val	Cys	Leu	Glu	His	Gln	Val	Lys	Phe	Gly	Glu	His	Val	Gly	Ile	
	80			85					90							
a	t	c	g	t	c	a	a	g	t	t	g	g	g	t	g	339
Ile	Gly	Ser	Thr	Lys	Glu	Leu	Gly	Ser	Trp	Glu	Glu	Gln	Val	Glu	Leu	
	95			100					105							
g	a	t	g	g	t	t	a	t	t	t	g	g	g	g	aa	387
Glu	Trp	Thr	Thr	Asn	Gly	Trp	Val	Cys	Gln	Leu	Lys	Leu	Pro	Gly	Glu	
	110			115					120					125		
a	c	t	g	g	t	t	aa	t	t	t	g	g	g	g	aa	435
Thr	Leu	Val	Glu	Lys	Phe	Val	Ile	Phe	Leu	Val	Gly	Gly	Lys	Asp		
	130			135					140							
a	aa	at	t	g	g	a	at	a	c	gt	gt	g	ct	cc	aa	483
Lys	Ile	Trp	Glu	Asp	Gly	Asn	Asn	Arg	Val	Val	Glu	Leu	Pro	Lys	Asp	
	145			150					155							
g	tt	a	g	tt	t	tt	531									
Gly	Lys	Phe	Asp	Ile	Val	Cys	His	Trp	Asn	Arg	Thr	Glu	Glu	Pro	Leu	
	160			165					170							
g	aa	ct	t	tt	579											
Glu	Leu	Leu	Gly	Thr	Pro	Lys	Phe	Glu	Leu	Val	Gly	Glu	Ala	Glu	Lys	
	175			180					185							
a	at	at	tt	627												
Asn	Thr	Gly	Glu	Asp	Ala	Ser	Ala	Ser	Val	Thr	Phe	Ala	Pro	Glu	Lys	

190	195	200	205	
gtt caa gat att tca gtt gtt gag aat ggt gat cca gca cca gag gcc Val Gln Asp Ile Ser Val Val Glu Asn Gly Asp Pro Ala Pro Glu Ala 210 215 220				675
gag tca agc aaa ttt ggt ggg caa tgg caa gga agt aaa act gtt ttc Glu Ser Ser Lys Phe Gly Gly Gln Trp Gln Gly Ser Lys Thr Val Phe 225 230 235				723
atg aga tca aat gag cat ctg aat aag gag gct gat agg atg tgg gat Met Arg Ser Asn Glu His Leu Asn Lys Glu Ala Asp Arg Met Trp Asp 240 245 250				771
aca act ggg ctt gat gga ata gca ctg aaa ctg gtg gag ggc gat aaa Thr Thr Gly Leu Asp Gly Ile Ala Leu Lys Leu Val Glu Gly Asp Lys 255 260 265				819
gca tcc agg aac tgg tgg cgg aag tta gag gtt gtt cgc ggg ata ttg Ala Ser Arg Asn Trp Trp Arg Lys Leu Glu Val Val Arg Gly Ile Leu 270 275 280 285				867
tca gaa tct ttt gat gac cag agt cgt ctg ggg gcc ctt gta tac tca Ser Glu Ser Phe Asp Asp Gln Ser Arg Leu Gly Ala Leu Val Tyr Ser 290 295 300				915
gct att tat ctg aag tgg att tat aca ggt cag ata tcg tgc ttt gaa Ala Ile Tyr Leu Lys Trp Ile Tyr Thr Gly Gln Ile Ser Cys Phe Glu 305 310 315				963
gat ggt ggc cac cat cgg cct aac aaa cat gct gag ata tcg agg caa Asp Gly Gly His His Arg Pro Asn Lys His Ala Glu Ile Ser Arg Gln 320 325 330				1011
ata ttc cgt gaa ctt gaa atg atg tat tat ggg aaa acc acc aca tca gcc Ile Phe Arg Glu Leu Glu Met Met Tyr Tyr Gly Lys Thr Thr Ser Ala 335 340 345				1059
aag gat gtt ctc gtg att cgc aaa att cat ccc ttt tta cct tca ttt Lys Asp Val Leu Val Ile Arg Lys Ile His Pro Phe Leu Pro Ser Phe 350 355 360 365				1107
aag tca gag ttt aca gcc tct gtc cct cta aca cga att cgt gat att Lys Ser Glu Phe Thr Ala Ser Val Pro Leu Thr Arg Ile Arg Asp Ile 370 375 380				1155
gct cac cgg aat gac atc cca cat gat ctc aag caa gaa atc aag cat Ala His Arg Asn Asp Ile Pro His Asp Leu Lys Gln Glu Ile Lys His 385 390 395				1203
act ata caa aac aaa ctt cat cgt aat gct gga cct gag gat ctt att Thr Ile Gln Asn Lys Leu His Arg Asn Ala Gly Pro Glu Asp Leu Ile 400 405 410				1251
gct aca gaa gtc atg ctt gct agg att act aag acc cct gga gaa tac Ala Thr Glu Val Met Leu Ala Arg Ile Thr Lys Thr Pro Gly Glu Tyr 415 420 425				1299
agt gaa aca ttt gtt gaa caa ttc acg ata ttt tat agc gaa cta aaa Ser Glu Thr Phe Val Glu Gln Phe Thr Ile Phe Tyr Ser Glu Leu Lys 430 435 440 445				1347
gat ttc ttc aat gct ggc agc cta ttt gag caa ctg gag tcc atc aag Asp Phe Phe Asn Ala Gly Ser Leu Phe Glu Gln Leu Glu Ser Ile Lys				1395

450	455	460	
gaa tct ctg aac gag tca ggc tta gaa gtt ctc tca tcc ttt gtg gaa Glu Ser Leu Asn Glu Ser Gly Leu Glu Val Leu Ser Ser Phe Val Glu 465 470 475			1443
acc aaa agg agt ttg gac caa gtg gat cat gca gaa gat ttg gat aaa Thr Lys Arg Ser Leu Asp Gln Val Asp His Ala Glu Asp Leu Asp Lys 480 485 490			1491
aat gat acc att caa att ttg atg act acc ttg caa tca tta tct tct Asn Asp Thr Ile Gln Ile Leu Met Thr Thr Leu Gln Ser Leu Ser Ser 495 500 505			1539
cta aga tcg gtt cta atg aag ggc ctt gaa agt ggc ctt aga aat gat Leu Arg Ser Val Leu Met Lys Gly Leu Glu Ser Gly Leu Arg Asn Asp 510 515 520 525			1587
gcg cct gat aat gct ata gca atg cga caa aag tgg cgc ctt tgt gaa Ala Pro Asp Asn Ala Ile Ala Met Arg Gln Lys Trp Arg Leu Cys Glu 530 535 540			1635
att agt ctt gag gat tat tca ttt gtt ctg tta agc aga ttc atc aat Ile Ser Leu Glu Asp Tyr Ser Phe Val Leu Leu Ser Arg Phe Ile Asn 545 550 555			1683
act ctt gaa gcc tta ggt gga tca gct tca ctt gca aag gat gta gct Thr Leu Glu Ala Leu Gly Gly Ser Ala Ser Leu Ala Lys Asp Val Ala 560 565 570			1731
aga aat act act cta tgg gat act act ctt gat gcc ctt gtc att ggc Arg Asn Thr Thr Leu Trp Asp Thr Leu Asp Ala Leu Val Ile Gly 575 580 585			1779
atc aat caa gtt agc ttt tca ggt tgg aaa aca gat gaa tgt att gcc Ile Asn Gln Val Ser Phe Ser Gly Trp Lys Thr Asp Glu Cys Ile Ala 590 595 600 605			1827
ata ggg aat gag att ctt tcc tgg aag caa aaa ggt cta tct gaa agt Ile Gly Asn Glu Ile Leu Ser Trp Lys Gln Lys Gly Leu Ser Glu Ser 610 615 620			1875
gaa ggt tgt gaa gat ggg aaa tat att tgg tca cta aga ctt aaa gct Glu Gly Cys Glu Asp Gly Lys Tyr Ile Trp Ser Leu Arg Leu Lys Ala 625 630 635			1923
aca ctg gac aga gca cgg aga tta acg gaa gag tac tct gaa gca ctt Thr Leu Asp Arg Ala Arg Arg Leu Thr Glu Glu Tyr Ser Glu Ala Leu 640 645 650			1971
ctt tct ata ttc cct gaa aaa gta atg gtt att ggg aaa gcc ctt gga Leu Ser Ile Phe Pro Glu Lys Val Met Val Ile Gly Lys Ala Leu Gly 655 660 665			2019
ata cca gat aac agt gtg aga act tac aca gag gca gaa att cgt gct Ile Pro Asp Asn Ser Val Arg Thr Tyr Thr Glu Ala Glu Ile Arg Ala 670 675 680 685			2067
ggc att gtt ttt cag gta tct aaa cta tgc aca gta ctt cag aaa gca Gly Ile Val Phe Gln Val Ser Lys Leu Cys Thr Val Leu Gln Lys Ala 690 695 700			2115
att cga gaa gta ctt gga tca act ggc tgg gat gtt ctt gtt cct gga Ile Arg Glu Val Leu Gly Ser Thr Gly Trp Asp Val Leu Val Pro Gly			2163

705	710	715	
gtg gcc cat gga act ctg atg cg ⁷²⁰ g ⁷²⁵ gaa aga att ctt cct gga tca Val Ala His Gly Thr Leu Met Arg Val Glu Arg Ile Leu Pro Gly Ser			2211
tta cct tca tct gtc aaa gaa cct g ⁷³⁵ t ⁷⁴⁰ gtt cta att gta gat aag gct Leu Pro Ser Ser Val Lys Glu Pro Val Val Leu Ile Val Asp Lys Ala			2259
gat gga gat gaa gag gtc aaa gct gct ggg gat aat ata gtt ggt gtt Asp Gly Asp Glu Glu Val Lys Ala Ala Gly Asp Asn Ile Val Gly Val 750 755 760 765			2307
att ctt ctt cag gaa cta cct cac ctt tca cat ctt ggt gtt aga gct Ile Leu Leu Gln Glu Leu Pro His Leu Ser His Leu Gly Val Arg Ala 770 775 780			2355
cgt caa gag aat gtt gta ttt gta act t ⁷⁸⁵ g ⁷⁹⁰ t ⁷⁹⁵ gaa tat gat gac aca gtt Arg Gln Glu Asn Val Val Phe Val Thr Cys Glu Tyr Asp Asp Thr Val			2403
aca gat gtg tat ttg ctt gag gga aaa tat atc aga tta gaa gca tca Thr Asp Val Tyr Leu Leu Glu Gly Lys Tyr Ile Arg Leu Glu Ala Ser 800 805 810			2451
tcc atc aat gtc aat ctc tca ata gtt tca gaa aaa aat gac aat gct Ser Ile Asn Val Asn Leu Ser Ile Val Ser Glu Lys Asn Asp Asn Ala 815 820 825			2499
gtc tct aca gaa cca aat agt aca ggg aat cca ttt caa cag aaa ctc Val Ser Thr Glu Pro Asn Ser Thr Gly Asn Pro Phe Gln Gln Lys Leu 830 835 840 845			2547
caa aat gaa ttc tct cta cca tcg gat atc gag atg cca ctg caa atg Gln Asn Glu Phe Ser Leu Pro Ser Asp Ile Glu Met Pro Leu Gln Met 850 855 860			2595
tct aag caa aaa agc aaa tca gga gtg aat ggt agt ttt gct gct ctt Ser Lys Gln Lys Ser Lys Ser Gly Val Asn Gly Ser Phe Ala Ala Leu 865 870 875			2643
gag ctt tca gaa gct tca gtg gaa tca gct ggt gca aaa gct gct gca Glu Leu Ser Glu Ala Ser Val Glu Ser Ala Gly Ala Lys Ala Ala Ala 880 885 890			2691
tgc aga act ctt tct gtt ctt gct tca ttg tct aat aaa gtc tat agt Cys Arg Thr Leu Ser Val Leu Ala Ser Leu Ser Asn Lys Val Tyr Ser 895 900 905			2739
gat caa gga gtt cca gca gcc ttt aga gtc cct tct ggt gct gtg ata Asp Gln Gly Val Pro Ala Ala Phe Arg Val Pro Ser Gly Ala Val Ile 910 915 920 925			2787
cca ttt gga tca atg gag gat gcg ctc aag aaa agt gga tca ctg gaa Pro Phe Gly Ser Met Glu Asp Ala Leu Lys Lys Ser Gly Ser Leu Glu 930 935 940			2835
tcc ttt aca agc ctt cta gaa aag att gaa aca gcc aaa gtc gaa aat Ser Phe Thr Ser Leu Leu Glu Lys Ile Glu Thr Ala Lys Val Glu Asn 945 950 955			2883
ggt gaa gtt gat agc ctg gcg ttg gag cta caa gca ata att tca cat Gly Glu Val Asp Ser Leu Ala Leu Glu Leu Gln Ala Ile Ile Ser His			2931

960	965	970	
ctt tcc cca ccg gag gag act att ata ttt ctc aaa aga atc ttc cca Leu Ser Pro Pro Glu Glu Thr Ile Ile Phe Leu Lys Arg Ile Phe Pro 975 980 985			2979
cag gat gtc cg ^g ttg att gtt aga tct agt gct aat g ^t g ^g gag gat ttg Gln Asp Val Arg Leu Ile Val Arg Ser Ser Ala Asn Val Glu Asp Leu 990 995 1000 1005			3027
gct ggt atg tca gct gct ggt ctc tat gat tca att ccc aat gtc Ala Gly Met Ser Ala Ala Gly Leu Tyr Asp Ser Ile Pro Asn Val 1010 1015 1020			3072
agt ctc atg gac cca tgt gcc ttt gga gct gcg gtt ggg aag gtt Ser Leu Met Asp Pro Cys Ala Phe Gly Ala Ala Val Gly Lys Val 1025 1030 1035			3117
tgg gct tct tta tac aca agg aga gcc atc cta agc cgt cga gcc Trp Ala Ser Leu Tyr Thr Arg Arg Ala Ile Leu Ser Arg Arg Ala 1040 1045 1050			3162
gct ggt gtt tat cag aga gac g ^c aca atg gct gtt ctt gtc caa Ala Gly Val Tyr Gln Arg Asp Ala Thr Met Ala Val Leu Val Gln 1055 1060 1065			3207
gaa ata ctg cag cca gat ctc tcc ttc gt ^g ctt cat act gtt tgc Glu Ile Leu Gln Pro Asp Leu Ser Phe Val Leu His Thr Val Cys 1070 1075 1080			3252
ccc gct gac cat gac ccc aag gtt gtc cag gct gag gtc gcc cct Pro Ala Asp His Asp Pro Lys Val Val Gln Ala Glu Val Ala Pro 1085 1090 1095			3297
ggg ctg ggt gaa acg ctt gct tca gga acc cgt ggc acc ccg tgg Gly Leu Gly Glu Thr Leu Ala Ser Gly Thr Arg Gly Thr Pro Trp 1100 1105 1110			3342
agg ctg tca tgt aac aaa ttc gat gga aaa gtt gcc act ctt gcc Arg Leu Ser Cys Asn Lys Phe Asp Gly Lys Val Ala Thr Leu Ala 1115 1120 1125			3387
ttt tca aat ttc agt gag gag atg gt ^g gt ^g cac aac tct ggt cct Phe Ser Asn Phe Ser Glu Glu Met Val Val His Asn Ser Gly Pro 1130 1135 1140			3432
gcc aat gga gaa gta att cgt ctt act gtt gat tac agc aag aag Ala Asn Gly Glu Val Ile Arg Leu Thr Val Asp Tyr Ser Lys Lys 1145 1150 1155			3477
cca ttg tcg gtt gat aca acc ttt agg aag cag ttt ggt cag cga Pro Leu Ser Val Asp Thr Thr Phe Arg Lys Gln Phe Gly Gln Arg 1160 1165 1170			3522
ctg gct g ^c att ggc cag tat ctg gag cag aag ttc ggg agt gca Leu Ala Ala Ile Gly Gln Tyr Leu Glu Gln Lys Phe Gly Ser Ala 1175 1180 1185			3567
cag gat gt ^g gaa ggt tgc ctg gtt ggg aaa gat att ttt ata gt ^g Gln Asp Val Glu Gly Cys Leu Val Gly Lys Asp Ile Phe Ile Val 1190 1195 1200			3612
caa agc agg cca cag cca tag aagccgaatt c Gln Ser Arg Pro Gln Pro			3644

<210> 4

<211> 1206

<212> PRT

<213> Oryza sativa

<400> 4

Met Thr Ser Leu Arg Pro Leu Glu Thr Ser Leu Ser Ile Gly Gly Arg
1 5 10 15Pro Arg Arg Gly Leu Val Leu Pro Pro Pro Gly Val Gly Ala Gly Val
20 25 30Leu Leu Arg Arg Gly Ala Met Ala Leu Pro Gly Arg Arg Gly Phe Ala
35 40 45Cys Arg Gly Arg Ser Ala Ala Ser Ala Ala Glu Arg Thr Lys Glu Lys
50 55 60Lys Arg Arg Asp Ser Ser Lys Gln Pro Leu Val His Leu Gln Val Cys
65 70 75 80Leu Glu His Gln Val Lys Phe Gly Glu His Val Gly Ile Ile Gly Ser
85 90 95Thr Lys Glu Leu Gly Ser Trp Glu Gln Val Glu Leu Glu Trp Thr
100 105 110Thr Asn Gly Trp Val Cys Gln Leu Lys Leu Pro Gly Glu Thr Leu Val
115 120 125Glu Phe Lys Phe Val Ile Phe Leu Val Gly Gly Lys Asp Lys Ile Trp
130 135 140Glu Asp Gly Asn Asn Arg Val Val Glu Leu Pro Lys Asp Gly Lys Phe
145 150 155 160Asp Ile Val Cys His Trp Asn Arg Thr Glu Glu Pro Leu Glu Leu Leu
165 170 175Gly Thr Pro Lys Phe Glu Leu Val Gly Glu Ala Glu Lys Asn Thr Gly
180 185 190Glu Asp Ala Ser Ala Ser Val Thr Phe Ala Pro Glu Lys Val Gln Asp
Page 17

195

200

205

Ile Ser Val Val Glu Asn Gly Asp Pro Ala Pro Glu Ala Glu Ser Ser
210 215 220

Lys Phe Gly Gly Gln Trp Gln Gly Ser Lys Thr Val Phe Met Arg Ser
225 230 235 240

Asn Glu His Leu Asn Lys Glu Ala Asp Arg Met Trp Asp Thr Thr Gly
245 250 255

Leu Asp Gly Ile Ala Leu Lys Leu Val Glu Gly Asp Lys Ala Ser Arg
260 265 270

Asn Trp Trp Arg Lys Leu Glu Val Val Arg Gly Ile Leu Ser Glu Ser
275 280 285

Phe Asp Asp Gln Ser Arg Leu Gly Ala Leu Val Tyr Ser Ala Ile Tyr
290 295 300

Leu Lys Trp Ile Tyr Thr Gly Gln Ile Ser Cys Phe Glu Asp Gly Gly
305 310 315 320

His His Arg Pro Asn Lys His Ala Glu Ile Ser Arg Gln Ile Phe Arg
325 330 335

Glu Leu Glu Met Met Tyr Tyr Gly Lys Thr Thr Ser Ala Lys Asp Val
340 345 350

Leu Val Ile Arg Lys Ile His Pro Phe Leu Pro Ser Phe Lys Ser Glu
355 360 365

Phe Thr Ala Ser Val Pro Leu Thr Arg Ile Arg Asp Ile Ala His Arg
370 375 380

Asn Asp Ile Pro His Asp Leu Lys Gln Glu Ile Lys His Thr Ile Gln
385 390 395 400

Asn Lys Leu His Arg Asn Ala Gly Pro Glu Asp Leu Ile Ala Thr Glu
405 410 415

Val Met Leu Ala Arg Ile Thr Lys Thr Pro Gly Glu Tyr Ser Glu Thr
420 425 430

Phe Val Glu Gln Phe Thr Ile Phe Tyr Ser Glu Leu Lys Asp Phe Phe
435 440 445

Asn Ala Gly Ser Leu Phe Glu Gln Leu Glu Ser Ile Lys Glu Ser Leu
435 440 445

450

455

460

Asn Glu Ser Gly Leu Glu Val Leu Ser Ser Phe Val Glu Thr Lys Arg
465 470 475 480

Ser Leu Asp Gln Val Asp His Ala Glu Asp Leu Asp Lys Asn Asp Thr
485 490 495

Ile Gln Ile Leu Met Thr Thr Leu Gln Ser Leu Ser Ser Leu Arg Ser
500 505 510

Val Leu Met Lys Gly Leu Glu Ser Gly Leu Arg Asn Asp Ala Pro Asp
515 520 525

Asn Ala Ile Ala Met Arg Gln Lys Trp Arg Leu Cys Glu Ile Ser Leu
530 535 540

Glu Asp Tyr Ser Phe Val Leu Leu Ser Arg Phe Ile Asn Thr Leu Glu
545 550 555 560

Ala Leu Gly Gly Ser Ala Ser Leu Ala Lys Asp Val Ala Arg Asn Thr
565 570 575

Thr Leu Trp Asp Thr Thr Leu Asp Ala Leu Val Ile Gly Ile Asn Gln
580 585 590

Val Ser Phe Ser Gly Trp Lys Thr Asp Glu Cys Ile Ala Ile Gly Asn
595 600 605

Glu Ile Leu Ser Trp Lys Gln Lys Gly Leu Ser Glu Ser Glu Gly Cys
610 615 620

Glu Asp Gly Lys Tyr Ile Trp Ser Leu Arg Leu Lys Ala Thr Leu Asp
625 630 635 640

Arg Ala Arg Arg Leu Thr Glu Glu Tyr Ser Glu Ala Leu Leu Ser Ile
645 650 655

Phe Pro Glu Lys Val Met Val Ile Gly Lys Ala Leu Gly Ile Pro Asp
660 665 670

Asn Ser Val Arg Thr Tyr Thr Glu Ala Glu Ile Arg Ala Gly Ile Val
675 680 685

Phe Gln Val Ser Lys Leu Cys Thr Val Leu Gln Lys Ala Ile Arg Glu
690 695 700

Val Leu Gly Ser Thr Gly Trp Asp Val Leu Val Pro Gly Val Ala His
Page 19

705

710

715

720

Gly Thr Leu Met Arg Val Glu Arg Ile Leu Pro Gly Ser Leu Pro Ser
725 730 735

Ser Val Lys Glu Pro Val Val Leu Ile Val Asp Lys Ala Asp Gly Asp
740 745 750

Glu Glu Val Lys Ala Ala Gly Asp Asn Ile Val Gly Val Ile Leu Leu
755 760 765

Gln Glu Leu Pro His Leu Ser His Leu Gly Val Arg Ala Arg Gln Glu
770 775 780

Asn Val Val Phe Val Thr Cys Glu Tyr Asp Asp Thr Val Thr Asp Val
785 790 795 800

Tyr Leu Leu Glu Gly Lys Tyr Ile Arg Leu Glu Ala Ser Ser Ile Asn
805 810 815

Val Asn Leu Ser Ile Val Ser Glu Lys Asn Asp Asn Ala Val Ser Thr
820 825 830

Glu Pro Asn Ser Thr Gly Asn Pro Phe Gln Gln Lys Leu Gln Asn Glu
835 840 845

Phe Ser Leu Pro Ser Asp Ile Glu Met Pro Leu Gln Met Ser Lys Gln
850 855 860

Lys Ser Lys Ser Gly Val Asn Gly Ser Phe Ala Ala Leu Glu Leu Ser
865 870 875 880

Glu Ala Ser Val Glu Ser Ala Gly Ala Lys Ala Ala Ala Cys Arg Thr
885 890 895

Leu Ser Val Leu Ala Ser Leu Ser Asn Lys Val Tyr Ser Asp Gln Gly
900 905 910

Val Pro Ala Ala Phe Arg Val Pro Ser Gly Ala Val Ile Pro Phe Gly
915 920 925

Ser Met Glu Asp Ala Leu Lys Lys Ser Gly Ser Leu Glu Ser Phe Thr
930 935 940

Ser Leu Leu Glu Lys Ile Glu Thr Ala Lys Val Glu Asn Gly Glu Val
945 950 955 960

Asp Ser Leu Ala Leu Glu Leu Gln Ala Ile Ile Ser His Leu Ser Pro
Page 20

965

970

975

Pro Glu Glu Thr Ile Ile Phe Leu Lys Arg Ile Phe Pro Gln Asp Val
 980 985 990

Arg Leu Ile Val Arg Ser Ser Ala Asn Val Glu Asp Leu Ala Gly Met
 995 1000 1005

Ser Ala Ala Gly Leu Tyr Asp Ser Ile Pro Asn Val Ser Leu Met
 1010 1015 1020

Asp Pro Cys Ala Phe Gly Ala Ala Val Gly Lys Val Trp Ala Ser
 1025 1030 1035

Leu Tyr Thr Arg Arg Ala Ile Leu Ser Arg Arg Ala Ala Gly Val
 1040 1045 1050

Tyr Gln Arg Asp Ala Thr Met Ala Val Leu Val Gln Glu Ile Leu
 1055 1060 1065

Gln Pro Asp Leu Ser Phe Val Leu His Thr Val Cys Pro Ala Asp
 1070 1075 1080

His Asp Pro Lys Val Val Gln Ala Glu Val Ala Pro Gly Leu Gly
 1085 1090 1095

Glu Thr Leu Ala Ser Gly Thr Arg Gly Thr Pro Trp Arg Leu Ser
 1100 1105 1110

Cys Asn Lys Phe Asp Gly Lys Val Ala Thr Leu Ala Phe Ser Asn
 1115 1120 1125

Phe Ser Glu Glu Met Val Val His Asn Ser Gly Pro Ala Asn Gly
 1130 1135 1140

Glu Val Ile Arg Leu Thr Val Asp Tyr Ser Lys Lys Pro Leu Ser
 1145 1150 1155

Val Asp Thr Thr Phe Arg Lys Gln Phe Gly Gln Arg Leu Ala Ala
 1160 1165 1170

Ile Gly Gln Tyr Leu Glu Gln Lys Phe Gly Ser Ala Gln Asp Val
 1175 1180 1185

Glu Gly Cys Leu Val Gly Lys Asp Ile Phe Ile Val Gln Ser Arg
 1190 1195 1200

Pro Gln Pro

1205

<210> 5
<211> 12
<212> PRT
<213> *Arabidopsis thaliana, Oryza sativa*

<400> 5
Leu Pro His Leu Ser His Leu Gly Val Arg Ala Arg
1 5 10

<210> 6
<211> 5124
<212> DNA
<213> *Citrus reticulata*

<220>
<221> CDS
<222> (257)..(4684)
<223>

<300>
<308> EMBL / AY094062
<309> 2003-05-03

<400> 6
gcacgagctc ttattacaag gtgccacgctc tcgtccgcga ctgagataaa tcgcaagtgt 60
cgctccagat ttttagtactt gtttcttacg gactccgtga aaaaaaccaa aatcaaataa 120
tagcgaatag ccatagtcac attctcagct tcatcaatat ctctaccaag cagtatctct 180
tcgtatattc accatccact tatcgttca tgctccaatt actctgagct aagaagtgt 240
cttattgttag aggaat atg agc aat agc ata ggc cgt aat gta ctc cac cag 292
Met Ser Asn Ser Ile Gly Arg Asn Val Leu His Gln
1 5 10
agc ttg ctt tgt tca acg gtt ttt gag cat caa agc aac cgt cat tct 340
Ser Leu Leu Cys Ser Thr Val Phe Glu His Gln Ser Asn Arg His Ser
15 20 25

tct ggc att cct gca aac tct ttg ttt caa gct gtc tct ata aat caa Ser Gly Ile Pro Ala Asn Ser Leu Phe Gln Ala Val Ser Ile Asn Gln 30 35 40	388
ccg gcg ggg gcg tcg gca gca cgc aag tcg cct tta tct acc aaa ttt Pro Ala Gly Ala Ser Ala Ala Arg Lys Ser Pro Leu Ser Thr Lys Phe 45 50 55 60	436
tac ggg acg agt ttg aat gct aga cca aag atg gcc atg gga agg cat Tyr Gly Thr Ser Leu Asn Ala Arg Pro Lys Met Ala Met Gly Arg His 65 70 75	484
cgc cct gtt ttg atc act cca cgt gct gta tta gcc gtg gat tca gct Arg Pro Val Leu Ile Thr Pro Arg Ala Val Leu Ala Val Asp Ser Ala 80 85 90	532
tct gag ctt gca gga aaa ttc aac ctt gaa ggg aat gtt gaa ttg cag Ser Glu Leu Ala Gly Lys Phe Asn Leu Glu Gly Asn Val Glu Leu Gln 95 100 105	580
att aca gtt ggt gct cca act cca ggg tct ttg aca caa gta aat att Ile Thr Val Gly Ala Pro Thr Pro Gly Ser Leu Thr Gln Val Asn Ile 110 115 120	628
gag atc tca tat agt agc aat tcc ttg ctt ctg cac tgg ggt gcg ata Glu Ile Ser Tyr Ser Asn Ser Leu Leu Leu His Trp Gly Ala Ile 125 130 135 140	676
cgt gac aaa aag gaa aag tgg gta ctt cct tct cgt ccg cca gat ggg Arg Asp Lys Lys Glu Lys Trp Val Leu Pro Ser Arg Pro Pro Asp Gly 145 150 155	724
acc aaa ata tta aag aat aga gcc ctt aga act ccc ttt gtg agc tct Thr Lys Ile Leu Lys Asn Arg Ala Leu Arg Thr Pro Phe Val Ser Ser 160 165 170	772
ggt tcc aaa tct ctc gtt aaa tta gag ata gat gat cct gca ata gaa Gly Ser Lys Ser Leu Val Lys Leu Glu Ile Asp Asp Pro Ala Ile Glu 175 180 185	820
gca gta gag ttt ctt ata ctc gat gaa gcc cag aat aaa tgg ttc aaa Ala Val Glu Phe Leu Ile Leu Asp Glu Ala Gln Asn Lys Trp Phe Lys 190 195 200	868
aac aat ggt gca aat ttt cat gta aag tta cca tca gag agg agt ttg Asn Asn Gly Ala Asn Phe His Val Lys Leu Pro Ser Glu Arg Ser Leu 205 210 215 220	916
att caa aat gtt tca gtt cct gaa gat ctt gta cag act caa gca tat Ile Gln Asn Val Ser Val Pro Glu Asp Leu Val Gln Thr Gln Ala Tyr 225 230 235	964
tta agg tgg gaa aga aag ggt aaa cag att tat act cct gaa caa gag Leu Arg Trp Glu Arg Lys Gly Lys Gln Ile Tyr Thr Pro Glu Gln Glu 240 245 250	1012
aag gag gag tat gaa gca gct cgc act gag ctg ctg gaa gaa att gtt Lys Glu Glu Tyr Glu Ala Ala Arg Thr Glu Leu Leu Glu Glu Ile Val 255 260 265	1060
aga ggt act tct gtg gag gac ctg cga gca aaa cta aca aac aaa aat Arg Gly Thr Ser Val Glu Asp Leu Arg Ala Lys Leu Thr Asn Lys Asn 270 275 280	1108

gat	aga	caa	gaa	att	aag	gaa	tct	tct	tcc	cat	gga	aca	aaa	aat	gcg	1156
Asp	Arg	Gln	Glu	Ile	Lys	Glu	Ser	Ser	Ser	His	Gly	Thr	Lys	Asn	Ala	
285				290					295					300		
ata	ccg	gat	gat	ctt	gtg	caa	ata	caa	tct	tat	ata	cgg	tgg	gag	aga	1204
Ile	Pro	Asp	Asp	Leu	Val	Gln	Ile	Gln	Ser	Tyr	Ile	Arg	Trp	Glu	Arg	
				305					310					315		
gct	ggg	aag	ccc	aat	tac	tct	gca	gac	caa	cag	ctt	aga	gaa	ttt	gag	1252
Ala	Gly	Lys	Pro	Asn	Tyr	Ser	Ala	Asp	Gln	Gln	Leu	Arg	Glu	Phe	Glu	
				320					325					330		
gaa	gca	aga	aaa	gaa	ttg	caa	tct	gaa	cta	gag	aag	ggt	atc	tct	ctt	1300
Glu	Ala	Arg	Lys	Glu	Leu	Gln	Ser	Glu	Leu	Glu	Lys	Gly	Ile	Ser	Leu	
				335			340				345					
gat	gaa	ata	tgg	aaa	aag	att	aca	aaa	ggg	gag	atc	cag	act	aag	gtc	1348
Asp	Glu	Ile	Trp	Lys	Lys	Ile	Thr	Lys	Gly	Glu	Ile	Gln	Thr	Lys	Val	
				350			355				360					
tct	gat	caa	ctt	aaa	act	aaa	aag	tat	ttt	aga	act	gaa	agg	att	cag	1396
Ser	Asp	Gln	Leu	Lys	Thr	Lys	Tyr	Phe	Arg	Thr	Glu	Arg	Ile	Gln		
				365			370				375				380	
agg	aag	cag	agg	gac	ttt	atg	cag	att	cta	aac	aaa	cat	gtg	gct	gaa	1444
Arg	Lys	Gln	Arg	Asp	Phe	Met	Gln	Ile	Leu	Asn	Lys	His	Val	Ala	Glu	
				385				390						395		
ccc	aca	gag	aag	aag	aat	att	tca	gtt	gaa	cca	aaa	gcc	ttg	aca	cca	1492
Pro	Thr	Glu	Lys	Lys	Asn	Ile	Ser	Val	Glu	Pro	Lys	Ala	Leu	Thr	Pro	
				400				405					410			
gtt	gaa	ctt	ttc	gtc	ggg	gca	act	gaa	gaa	cag	gag	ggt	gat	tct	att	1540
Val	Glu	Leu	Phe	Val	Gly	Ala	Thr	Glu	Glu	Gln	Glu	Gly	Asp	Ser	Ile	
				415			420					425				
ctt	aac	aag	aag	atc	tac	aag	ctt	gct	ggc	aaa	gaa	ctt	ctg	gta	ctt	1588
Leu	Asn	Lys	Lys	Ile	Tyr	Lys	Leu	Ala	Gly	Lys	Glu	Leu	Leu	Val	Leu	
				430			435				440					
gtg	cac	aag	cct	ggt	ggc	aag	acc	aaa	att	cac	cta	gct	act	gat	ggc	1636
Val	His	Lys	Pro	Gly	Gly	Lys	Thr	Lys	Ile	His	Leu	Ala	Thr	Asp	Gly	
				445			450				455				460	
aaa	gag	cca	ctc	att	ctc	cac	tgg	gct	ttg	tct	aag	aag	gct	gga	gaa	1684
Lys	Glu	Pro	Leu	Ile	Leu	His	Trp	Ala	Leu	Ser	Lys	Lys	Ala	Gly	Glu	
				465				470					475			
tgg	ttg	gct	ccg	cct	cca	agt	gta	ctg	cct	gca	ggt	tca	gtt	ttg	ctg	1732
Trp	Leu	Ala	Pro	Pro	Pro	Ser	Val	Leu	Pro	Ala	Gly	Ser	Val	Leu	Leu	
				480				485					490			
agt	ggg	tca	gtt	gaa	aca	aca	tcc	aca	act	agc	tct	ctt	gcg	gat	ctg	1780
Ser	Gly	Ser	Val	Glu	Thr	Thr	Phe	Thr	Thr	Ser	Ser	Leu	Ala	Asp	Leu	
				495				500					505			
cct	tat	cag	gtc	caa	tca	att	gaa	ata	gag	att	gaa	gaa	gaa	ggt	tat	1828
Pro	Tyr	Gln	Val	Gln	Ser	Ile	Glu	Ile	Glu	Ile	Glu	Glu	Glu	Gly	Tyr	
				510			515				520					
gtt	gga	atg	cca	tct	gtc	ctt	cag	tct	ggc	gga	aac	tgg	ata	aag	aat	1876
Val	Gly	Met	Pro	Ser	Val	Leu	Gln	Ser	Gly	Gly	Asn	Trp	Ile	Lys	Asn	
				525			530				535			540		

aag ggc tct gac ttc tat gtt gac ttt agc tat gaa tct aag caa gtt Lys Gly Ser Asp Phe Tyr Val Asp Phe Ser Tyr Glu Ser Lys Gln Val 545 550 555	1924
caa cag gat ttt ggc gat ggc aaa ggt acg gcc aag gct ttg ttg gag Gln Gln Asp Phe Gly Asp Gly Lys Gly Thr Ala Lys Ala Leu Leu Glu 560 565 570	1972
aaa ata gca gga ttg gaa att gag gca cag aag tcc ttt atg cac cgg Lys Ile Ala Gly Leu Glu Ile Glu Ala Gln Lys Ser Phe Met His Arg 575 580 585	2020
ttt aac att gca gca gac ttg ata caa gaa gcc aaa gag gct ggt gaa Phe Asn Ile Ala Ala Asp Leu Ile Gln Glu Ala Lys Glu Ala Gly Glu 590 595 600	2068
ctg ggc ttt gct ggg atc ttg gtg tgg atg agg ttt atg gct aca agg Leu Gly Phe Ala Gly Ile Leu Val Trp Met Arg Phe Met Ala Thr Arg 605 610 615 620	2116
cag cta ata tgg aat aaa aac tac aat gtt aaa cca cgt gaa atc agt Gln Leu Ile Trp Asn Lys Asn Tyr Asn Val Lys Pro Arg Glu Ile Ser 625 630 635	2164
aaa gcc cag gat agg ctt aca gac ctg ctc cag aat gtc tac att agt Lys Ala Gln Asp Arg Leu Thr Asp Leu Leu Gln Asn Val Tyr Ile Ser 640 645 650	2212
aat cca gag tat agg gaa att gtg cgc atg att ttg tct act gtt ggc Asn Pro Glu Tyr Arg Glu Ile Val Arg Met Ile Leu Ser Thr Val Gly 655 660 665	2260
cgt gga ggt gaa gga gat gtg gga cag cga att cgc gat gaa atc ctg Arg Gly Glu Gly Asp Val Gly Gln Arg Ile Arg Asp Glu Ile Leu 670 675 680	2308
gtt atc cag aga aac aat aat tgc aag ggt gga atg atg gaa gaa tgg Val Ile Gln Arg Asn Asn Cys Lys Gly Gly Met Met Glu Glu Trp 685 690 695 700	2356
cat cag aag ttg cat aat aac act agt cct gat gat gtt ata att tgt His Gln Lys Leu His Asn Asn Thr Ser Pro Asp Asp Val Ile Ile Cys 705 710 715	2404
cag gca ttg att gat tat att aaa agt gac ttc gac atc agt gcc tac Gln Ala Leu Ile Asp Tyr Ile Lys Ser Asp Phe Asp Ile Ser Ala Tyr 720 725 730	2452
tgg aag act ttg aat gac aat ggc att acg aaa gaa cgt ctt cta agt Trp Lys Thr Leu Asn Asp Asn Gly Ile Thr Lys Glu Arg Leu Leu Ser 735 740 745	2500
tat gat cgt gcg atc cat tct gag cca aac ttc aga aga gat cag aag Tyr Asp Arg Ala Ile His Ser Glu Pro Asn Phe Arg Arg Asp Gln Lys 750 755 760	2548
gat ggt ctg ctg cgt gac cta gga aac tac atg aga acc tta aag gcg Asp Gly Leu Leu Arg Asp Leu Gly Asn Tyr Met Arg Thr Leu Lys Ala 765 770 775 780	2596
gtt cat tca ggt gca gat ctt gag tct gct atc acg aat tgc ttg ggc Val His Ser Gly Ala Asp Leu Glu Ser Ala Ile Thr Asn Cys Leu Gly 785 790 795	2644

tac	aga	tct	gag	ggt	caa	ggg	ttc	atg	gtc	ggg	gtg	cag	ata	aat	cct	2692
Tyr	Arg	Ser	Glu	Gly	Gln	Gly	Phe	Met	Val	Gly	Val	Gln	Ile	Asn	Pro	
800					805							810				
ata	ccg	aac	ttg	cca	tct	gga	ttt	cca	gaa	ttg	ctt	caa	ttt	gtc	tct	2740
Ile	Pro	Asn	Leu	Pro	Ser	Gly	Phe	Pro	Glu	Leu	Leu	Gln	Phe	Val	Ser	
815					820							825				
gag	cat	gtt	gaa	gat	aga	aat	gta	gaa	gca	ttg	ctt	gag	ggt	ttg	ctg	2788
Glu	His	Val	Glu	Asp	Arg	Asn	Val	Glu	Ala	Leu	Leu	Glu	Gly	Leu	Leu	
830					835						840					
gag	gct	cgt	caa	gag	att	cg	cca	ttg	ctg	tgc	aag	cac	aat	gat	cgt	2836
Glu	Ala	Arg	Gln	Glu	Ile	Arg	Pro	Leu	Leu	Cys	Lys	His	Asn	Asp	Arg	
845					850					855					860	
ctg	aag	gat	cta	tta	ttt	ttg	gac	ata	gcc	ctt	gag	tct	agt	gtt	agg	2884
Leu	Lys	Asp	Leu	Leu	Phe	Leu	Asp	Ile	Ala	Leu	Glu	Ser	Ser	Val	Arg	
865					870						875					
aca	gct	att	gaa	aaa	gga	tac	gag	gaa	ttg	aac	gag	gct	gga	ccg	gag	2932
Thr	Ala	Ile	Glu	Lys	Gly	Tyr	Glu	Glu	Leu	Asn	Glu	Ala	Gly	Pro	Glu	
880					885						890					
aaa	atc	atg	tac	ttt	gtc	tct	ctg	att	ctt	gaa	aat	ctc	gca	ctt	tca	2980
Lys	Ile	Met	Tyr	Phe	Val	Ser	Leu	Ile	Leu	Glu	Asn	Leu	Ala	Leu	Ser	
895					900						905					
tta	gat	gac	aat	gag	gat	ctc	atc	tac	tgt	tta	aag	ggt	tgg	agt	aat	3028
Leu	Asp	Asp	Asn	Glu	Asp	Leu	Ile	Tyr	Cys	Leu	Lys	Gly	Trp	Ser	Asn	
910					915					920						
gct	tta	agc	atg	tcc	aag	agt	aaa	agt	gat	aac	tgg	gca	tta	ttt	gca	3076
Ala	Leu	Ser	Met	Ser	Lys	Ser	Lys	Ser	Asp	Asn	Trp	Ala	Leu	Phe	Ala	
925					930					935					940	
aaa	tca	gtt	ctt	gac	aga	act	cgc	ctt	gca	ctc	gcc	gac	aag	gca	gac	3124
Lys	Ser	Val	Leu	Asp	Arg	Thr	Arg	Leu	Ala	Leu	Ala	Gly	Lys	Ala	Asp	
945					950							955				
tgg	tac	cag	aaa	gtt	ttg	caa	cct	tcg	gca	gag	tat	ctt	gga	acg	ctg	3172
Trp	Tyr	Gln	Lys	Val	Leu	Gln	Pro	Ser	Ala	Glu	Tyr	Leu	Gly	Thr	Leu	
960					965						970					
ttg	agt	gtt	gat	aag	tgg	gct	gtg	gac	ata	ttt	aca	gaa	gaa	atg	atc	3220
Leu	Ser	Val	Asp	Lys	Trp	Ala	Val	Asp	Ile	Phe	Thr	Glu	Glu	Met	Ile	
975					980						985					
cgt	gct	gga	tca	gct	gca	gct	cta	tcc	tta	ctc	ctt	aat	cga	ctt	gtat	3268
Arg	Ala	Gly	Ser	Ala	Ala	Ala	Leu	Ser	Leu	Leu	Leu	Asn	Arg	Leu	Asp	
990					995						1000					
cca	gtt	ctt	cg	aag	aca	gct	agt	ctg	gga	agt	tgg	cag	gtt	atc	3313	
Pro	Val	Leu	Arg	Lys	Thr	Ala	Ser	Leu	Gly	Ser	Trp	Gln	Val	Ile		
1005					1010					1015						
agc	cct	gtt	gaa	gtt	ttt	gga	tat	gtc	gca	gtt	gtg	gat	gag	tta	3358	
Ser	Pro	Val	Glu	Val	Phe	Gly	Tyr	Val	Ala	Val	Val	Asp	Glu	Leu		
1020					1025					1030						
cta	gct	gtg	cag	gat	aaa	tct	tat	gat	cag	cct	aca	ata	tta	ctg	3403	
Leu	Ala	Val	Gln	Asp	Lys	Ser	Tyr	Asp	Gln	Pro	Thr	Ile	Leu	Leu		
1035					1040					1045						

gca	aga	cgt	gta	aaa	gga	gag	gaa	gaa	att	cca	cat	ggc	aca	gtt		3448
Ala	Arg	Arg	Val	Lys	Gly	Glu	Glu	Glu	Ile	Pro	His	Gly	Thr	Val		
1050				1055					1060							
gct	gta	ctg	aca	gcg	gat	atg	cca	gat	gtc	cta	tca	cat	gtt	tca		3493
Ala	Val	Leu	Thr	Ala	Asp	Met	Pro	Asp	Val	Leu	Ser	His	Val	Ser		
1065				1070					1075							
gtt	cga	gct	aga	aat	tgc	aag	gtt	tgc	ttc	gct	aca	tgc	ttt	gat		3538
Val	Arg	Ala	Arg	Asn	Cys	Lys	Val	Cys	Phe	Ala	Thr	Cys	Phe	Asp		
1080				1085					1090							
ccc	aat	atc	ttg	gct	gac	cta	caa	tca	aat	gaa	ggg	aaa	atg	ctg		3583
Pro	Asn	Ile	Leu	Ala	Asp	Leu	Gln	Ser	Asn	Glu	Gly	Lys	Met	Leu		
1095				1100					1105							
cac	cta	aaa	cca	aca	tct	gct	gat	att	gca	tat	agt	gtg	gtg	gag		3628
His	Leu	Lys	Pro	Thr	Ser	Ala	Asp	Ile	Ala	Tyr	Ser	Val	Val	Glu		
1110				1115					1120							
ggc	agt	gag	cta	caa	gat	tca	agt	tca	gct	aac	ttg	aaa	gaa	gaa		3673
Gly	Ser	Glu	Leu	Gln	Asp	Ser	Ser	Ser	Ala	Asn	Leu	Lys	Glu	Glu		
1125				1130					1135							
gat	ggt	cct	tca	tct	tct	gtt	gca	tta	gtc	aaa	aag	cag	ttt	gct		3718
Asp	Gly	Pro	Ser	Ser	Ser	Val	Ala	Leu	Val	Lys	Lys	Gln	Phe	Ala		
1140				1145					1150							
ggc	aga	tat	gct	ata	aca	tct	gat	gag	ttc	act	ggt	gaa	ctg	gtg		3763
Gly	Arg	Tyr	Ala	Ile	Thr	Ser	Asp	Glu	Phe	Thr	Gly	Glu	Leu	Val		
1155				1160					1165							
ggt	gct	aaa	tca	cgt	aat	att	gca	tat	ctg	aaa	gga	aaa	gta	ccg		3808
Gly	Ala	Lys	Ser	Arg	Asn	Ile	Ala	Tyr	Leu	Lys	Gly	Lys	Val	Pro		
1170				1175					1180							
tct	tgg	att	ggg	att	ccg	aca	tca	gtt	gcc	cta	cca	ttt	gga	gtg		3853
Ser	Trp	Ile	Gly	Ile	Pro	Thr	Ser	Val	Ala	Leu	Pro	Phe	Gly	Val		
1185				1190					1195							
ttt	gag	aag	gtt	ctt	tca	gat	gac	ata	aat	cag	gca	gtg	gca	gag		3898
Phe	Glu	Lys	Val	Leu	Ser	Asp	Asp	Ile	Asn	Gln	Ala	Val	Ala	Glu		
1200				1205					1210							
aag	ttg	caa	att	ttg	aaa	caa	aag	tta	gga	gag	gaa	gac	cat	agt		3943
Lys	Leu	Gln	Ile	Leu	Lys	Gln	Lys	Leu	Gly	Gl	Glu	Asp	His	Ser		
1215				1220					1225							
gcc	ctt	agg	gag	att	cg	gaa	aca	gtt	tta	cag	atg	aaa	gca	cc		3988
Ala	Leu	Arg	Glu	Ile	Arg	Glu	Thr	Val	Leu	Gln	Met	Lys	Ala	Pro		
1230				1235					1240							
aac	cag	ttg	gtc	caa	gaa	ctg	aag	aca	gag	atg	aaa	agt	tct	gt		4033
Asn	Gln	Leu	Val	Gln	Glu	Leu	Lys	Thr	Glu	Met	Lys	Ser	Ser	Gly		
1245				1250					1255							
atg	cct	tgg	cct	ggt	gat	gaa	ggt	gag	cag	cgc	tgg	gag	caa	gca		4078
Met	Pro	Trp	Pro	Gly	Asp	Glu	Gly	Glu	Gln	Arg	Trp	Glu	Gln	Ala		
1260				1265					1270							
tgg	atg	gct	atc	aag	aag	gtc	tgg	gct	tca	aaa	tgg	aat	gag	aga		4123
Trp	Met	Ala	Ile	Lys	Lys	Val	Trp	Ala	Ser	Lys	Trp	Asn	Glu	Arg		
1275				1280					1285							

gca	ttc	ttc	agc	aca	agg	aga	gta	aaa	tta	gat	cat	gaa	tat	ctc	4168
Ala	Phe	Phe	Ser	Thr	Arg	Arg	Val	Lys	Leu	Asp	His	Glu	Tyr	Leu	
1290					1295					1300					
tgc	atg	gct	gtc	ctg	gtt	cag	gaa	ata	atc	aat	gct	gac	tat	gca	4213
Cys	Met	Ala	Val	Leu	Val	Gln	Glu	Ile	Ile	Asn	Ala	Asp	Tyr	Ala	
1305					1310					1315					
ttt	gtt	atc	cat	aca	act	aat	ccc	tct	tca	gga	gat	tca	tca	gaa	4258
Phe	Val	Ile	His	Thr	Thr	Asn	Pro	Ser	Ser	Gly	Asp	Ser	Ser	Glu	
1320					1325					1330					
ata	tat	gct	gag	gtg	gtg	aag	gga	ctt	gga	gaa	act	ctc	gtt	gga	4303
Ile	Tyr	Ala	Glu	Val	Val	Lys	Gly	Leu	Gly	Glu	Thr	Leu	Val	Gly	
1335					1340					1345					
gct	tat	cca	ggc	cgt	gct	ttg	agt	ttt	gtc	tgc	aag	aaa	aat	gat	4348
Ala	Tyr	Pro	Gly	Arg	Ala	Leu	Ser	Phe	Val	Cys	Lys	Lys	Asn	Asp	
1350					1355					1360					
ttg	aag	tct	cct	cg	gtt	ttg	ggt	tat	cca	agc	aag	ccc	att	ggg	4393
Leu	Lys	Ser	Pro	Arg	Val	Leu	Gly	Tyr	Pro	Ser	Lys	Pro	Ile	Gly	
1365					1370					1375					
ctt	ttt	ata	aga	cga	tca	atc	atc	ttc	cga	tct	gat	tcc	aat	ggt	4438
Leu	Phe	Ile	Arg	Arg	Ser	Ile	Ile	Phe	Arg	Ser	Asp	Ser	Asn	Gly	
1380					1385					1390					
gaa	gat	ctg	gaa	ggt	tat	gct	ggt	gct	ggc	ctt	tat	gat	agt	gtg	4483
Glu	Asp	Leu	Glu	Gly	Tyr	Ala	Gly	Ala	Gly	Leu	Tyr	Asp	Ser	Val	
1395					1400					1405					
cca	atg	gat	gaa	gcc	gag	aaa	gtt	gtg	ctt	gat	tac	tct	tca	gac	4528
Pro	Met	Asp	Glu	Ala	Glu	Lys	Val	Val	Leu	Asp	Tyr	Ser	Ser	Asp	
1410					1415					1420					
cat	ctg	atc	act	gac	gga	cac	ttc	cag	caa	tca	att	ctc	tct	tcc	4573
His	Leu	Ile	Thr	Asp	Gly	His	Phe	Gln	Gln	Ser	Ile	Leu	Ser	Ser	
1425					1430					1435					
att	gct	cgt	gca	gga	tgt	gag	att	gag	gag	cta	ttt	gga	tct	gca	4618
Ile	Ala	Arg	Ala	Gly	Cys	Glu	Ile	Glu	Glu	Leu	Phe	Gly	Ser	Ala	
1440					1445					1450					
caa	gac	att	gaa	ggt	gtg	gtt	agg	gat	ggg	aaa	ata	tat	gtt	gtc	4663
Gln	Asp	Ile	Glu	Gly	Val	Val	Arg	Asp	Gly	Lys	Ile	Tyr	Val	Val	
1455					1460					1465					
cag	aca	aga	ccc	caa	atg	tga	ggctgttctt	tttctttttt	atttttttcct						4714
Gln	Thr	Arg	Pro	Gln	Met										
1470					1475										
gattggaaag ctattgataa aagcattata tcaatgaaaa aaattaaaaaa gaaattatag															4774
aggtcaagcc tagaaaggag gaaaggggag tgagtattta tttggaaagca agtggaaataa															4834
aggtacaaaa ggagagagga ataaagttgc aatttcccg aacatgtaaa ttcaacttggaa															4894
aatttgttac tggatgcttt gctctgtatg aagactaccg ggtcgaaatg acaacatttt															4954
tgtccatagg catgtatgt tacatttgat tctggtaat accatacgct tcattatagg															5014
ggatcagcag atactatgtt gtagttgaaa tgtaatgtt taataaaatg ttaatacataaa															5074

tgttataaca tttgtattaa cctgtacgt gaaaaaaaaaaa aaaaaaaaaaa

5124

<210> 7

<211> 1475

<212> PRT

<213> Citrus reticulata

<400> 7

Met Ser Asn Ser Ile Gly Arg Asn Val Leu His Gln Ser Leu Leu Cys
1 5 10 15

Ser Thr Val Phe Glu His Gln Ser Asn Arg His Ser Ser Gly Ile Pro
20 25 30

Ala Asn Ser Leu Phe Gln Ala Val Ser Ile Asn Gln Pro Ala Gly Ala
35 40 45

Ser Ala Ala Arg Lys Ser Pro Leu Ser Thr Lys Phe Tyr Gly Thr Ser
50 55 60

Leu Asn Ala Arg Pro Lys Met Ala Met Gly Arg His Arg Pro Val Leu
65 70 75 80

Ile Thr Pro Arg Ala Val Leu Ala Val Asp Ser Ala Ser Glu Leu Ala
85 90 95

Gly Lys Phe Asn Leu Glu Gly Asn Val Glu Leu Gln Ile Thr Val Gly
100 105 110

Ala Pro Thr Pro Gly Ser Leu Thr Gln Val Asn Ile Glu Ile Ser Tyr
115 120 125

Ser Ser Asn Ser Leu Leu His Trp Gly Ala Ile Arg Asp Lys Lys
130 135 140

Glu Lys Trp Val Leu Pro Ser Arg Pro Pro Asp Gly Thr Lys Ile Leu
145 150 155 160

Lys Asn Arg Ala Leu Arg Thr Pro Phe Val Ser Ser Gly Ser Lys Ser
165 170 175

Leu Val Lys Leu Glu Ile Asp Asp Pro Ala Ile Glu Ala Val Glu Phe
180 185 190

Leu Ile Leu Asp Glu Ala Gln Asn Lys Trp Phe Lys Asn Asn Gly Ala
Page 29

195

200

205

Asn Phe His Val Lys Leu Pro Ser Glu Arg Ser Leu Ile Gln Asn Val
210 215 220

Ser Val Pro Glu Asp Leu Val Gln Thr Gln Ala Tyr Leu Arg Trp Glu
225 230 235 240

Arg Lys Gly Lys Gln Ile Tyr Thr Pro Glu Gln Glu Lys Glu Glu Tyr
245 250 255

Glu Ala Ala Arg Thr Glu Leu Leu Glu Glu Ile Val Arg Gly Thr Ser
260 265 270

Val Glu Asp Leu Arg Ala Lys Leu Thr Asn Lys Asn Asp Arg Gln Glu
275 280 285

Ile Lys Glu Ser Ser His Gly Thr Lys Asn Ala Ile Pro Asp Asp
290 295 300

Leu Val Gln Ile Gln Ser Tyr Ile Arg Trp Glu Arg Ala Gly Lys Pro
305 310 315 320

Asn Tyr Ser Ala Asp Gln Gln Leu Arg Glu Phe Glu Glu Ala Arg Lys
325 330 335

Glu Leu Gln Ser Glu Leu Glu Lys Gly Ile Ser Leu Asp Glu Ile Trp
340 345 350

Lys Lys Ile Thr Lys Gly Glu Ile Gln Thr Lys Val Ser Asp Gln Leu
355 360 365

Lys Thr Lys Lys Tyr Phe Arg Thr Glu Arg Ile Gln Arg Lys Gln Arg
370 375 380

Asp Phe Met Gln Ile Leu Asn Lys His Val Ala Glu Pro Thr Glu Lys
385 390 395 400

Lys Asn Ile Ser Val Glu Pro Lys Ala Leu Thr Pro Val Glu Leu Phe
405 410 415

Val Gly Ala Thr Glu Glu Gln Glu Gly Asp Ser Ile Leu Asn Lys Lys
420 425 430

Ile Tyr Lys Leu Ala Gly Lys Glu Leu Leu Val Leu Val His Lys Pro
435 440 445

Gly Gly Lys Thr Lys Ile His Leu Ala Thr Asp Gly Lys Glu Pro Leu
Page 30

450

455

460

Ile Leu His Trp Ala Leu Ser Lys Lys Ala Gly Glu Trp Leu Ala Pro
465 470 475 480

Pro Pro Ser Val Leu Pro Ala Gly Ser Val Leu Leu Ser Gly Ser Val
485 490 495

Glu Thr Thr Phe Thr Thr Ser Ser Leu Ala Asp Leu Pro Tyr Gln Val
500 505 510

Gln Ser Ile Glu Ile Glu Ile Glu Glu Gly Tyr Val Gly Met Pro
515 520 525

Ser Val Leu Gln Ser Gly Gly Asn Trp Ile Lys Asn Lys Gly Ser Asp
530 535 540

Phe Tyr Val Asp Phe Ser Tyr Glu Ser Lys Gln Val Gln Gln Asp Phe
545 550 555 560

Gly Asp Gly Lys Gly Thr Ala Lys Ala Leu Leu Glu Lys Ile Ala Gly
565 570 575

Leu Glu Ile Glu Ala Gln Lys Ser Phe Met His Arg Phe Asn Ile Ala
580 585 590

Ala Asp Leu Ile Gln Glu Ala Lys Glu Ala Gly Glu Leu Gly Phe Ala
595 600 605

Gly Ile Leu Val Trp Met Arg Phe Met Ala Thr Arg Gln Leu Ile Trp
610 615 620

Asn Lys Asn Tyr Asn Val Lys Pro Arg Glu Ile Ser Lys Ala Gln Asp
625 630 635 640

Arg Leu Thr Asp Leu Leu Gln Asn Val Tyr Ile Ser Asn Pro Glu Tyr
645 650 655

Arg Glu Ile Val Arg Met Ile Leu Ser Thr Val Gly Arg Gly Glu
660 665 670

Gly Asp Val Gly Gln Arg Ile Arg Asp Glu Ile Leu Val Ile Gln Arg
675 680 685

Asn Asn Asn Cys Lys Gly Met Met Glu Glu Trp His Gln Lys Leu
690 695 700

His Asn Asn Thr Ser Pro Asp Asp Val Ile Ile Cys Gln Ala Leu Ile
Page 31

705

710

715

720

Asp Tyr Ile Lys Ser Asp Phe Asp Ile Ser Ala Tyr Trp Lys Thr Leu
725 730 735

Asn Asp Asn Gly Ile Thr Lys Glu Arg Leu Leu Ser Tyr Asp Arg Ala
740 745 750

Ile His Ser Glu Pro Asn Phe Arg Arg Asp Gln Lys Asp Gly Leu Leu
755 760 765

Arg Asp Leu Gly Asn Tyr Met Arg Thr Leu Lys Ala Val His Ser Gly
770 775 780

Ala Asp Leu Glu Ser Ala Ile Thr Asn Cys Leu Gly Tyr Arg Ser Glu
785 790 795 800

Gly Gln Gly Phe Met Val Gly Val Gln Ile Asn Pro Ile Pro Asn Leu
805 810 815

Pro Ser Gly Phe Pro Glu Leu Leu Gln Phe Val Ser Glu His Val Glu
820 825 830

Asp Arg Asn Val Glu Ala Leu Leu Glu Gly Leu Leu Glu Ala Arg Gln
835 840 845

Glu Ile Arg Pro Leu Leu Cys Lys His Asn Asp Arg Leu Lys Asp Leu
850 855 860

Leu Phe Leu Asp Ile Ala Leu Glu Ser Ser Val Arg Thr Ala Ile Glu
865 870 875 880

Lys Gly Tyr Glu Glu Leu Asn Glu Ala Gly Pro Glu Lys Ile Met Tyr
885 890 895

Phe Val Ser Leu Ile Leu Glu Asn Leu Ala Leu Ser Leu Asp Asp Asn
900 905 910

Glu Asp Leu Ile Tyr Cys Leu Lys Gly Trp Ser Asn Ala Leu Ser Met
915 920 925

Ser Lys Ser Lys Ser Asp Asn Trp Ala Leu Phe Ala Lys Ser Val Leu
930 935 940

Asp Arg Thr Arg Leu Ala Leu Ala Gly Lys Ala Asp Trp Tyr Gln Lys
945 950 955 960

Val Leu Gln Pro Ser Ala Glu Tyr Leu Gly Thr Leu Leu Ser Val Asp
Page 32

965

970

975

Lys Trp Ala Val Asp Ile Phe Thr Glu Glu Met Ile Arg Ala Gly Ser
 980 985 990

Ala Ala Ala Leu Ser Leu Leu Leu Asn Arg Leu Asp Pro Val Leu Arg
 995 1000 1005

Lys Thr Ala Ser Leu Gly Ser Trp Gln Val Ile Ser Pro Val Glu
 1010 1015 1020

Val Phe Gly Tyr Val Ala Val Val Asp Glu Leu Leu Ala Val Gln
 1025 1030 1035

Asp Lys Ser Tyr Asp Gln Pro Thr Ile Leu Leu Ala Arg Arg Val
 1040 1045 1050

Lys Gly Glu Glu Glu Ile Pro His Gly Thr Val Ala Val Leu Thr
 1055 1060 1065

Ala Asp Met Pro Asp Val Leu Ser His Val Ser Val Arg Ala Arg
 1070 1075 1080

Asn Cys Lys Val Cys Phe Ala Thr Cys Phe Asp Pro Asn Ile Leu
 1085 1090 1095

Ala Asp Leu Gln Ser Asn Glu Gly Lys Met Leu His Leu Lys Pro
 1100 1105 1110

Thr Ser Ala Asp Ile Ala Tyr Ser Val Val Glu Gly Ser Glu Leu
 1115 1120 1125

Gln Asp Ser Ser Ser Ala Asn Leu Lys Glu Glu Asp Gly Pro Ser
 1130 1135 1140

Ser Ser Val Ala Leu Val Lys Lys Gln Phe Ala Gly Arg Tyr Ala
 1145 1150 1155

Ile Thr Ser Asp Glu Phe Thr Gly Glu Leu Val Gly Ala Lys Ser
 1160 1165 1170

Arg Asn Ile Ala Tyr Leu Lys Gly Lys Val Pro Ser Trp Ile Gly
 1175 1180 1185

Ile Pro Thr Ser Val Ala Leu Pro Phe Gly Val Phe Glu Lys Val
 1190 1195 1200

Leu Ser Asp Asp Ile Asn Gln Ala Val Ala Glu Lys Leu Gln Ile
 Page 33

1205

1210

1215

Leu Lys Gln Lys Leu Gly Glu Glu Asp His Ser Ala Leu Arg Glu
1220 1225 1230

Ile Arg Glu Thr Val Leu Gln Met Lys Ala Pro Asn Gln Leu Val
1235 1240 1245

Gln Glu Leu Lys Thr Glu Met Lys Ser Ser Gly Met Pro Trp Pro
1250 1255 1260

Gly Asp Glu Gly Glu Gln Arg Trp Glu Gln Ala Trp Met Ala Ile
1265 1270 1275

Lys Lys Val Trp Ala Ser Lys Trp Asn Glu Arg Ala Phe Phe Ser
1280 1285 1290

Thr Arg Arg Val Lys Leu Asp His Glu Tyr Leu Cys Met Ala Val
1295 1300 1305

Leu Val Gln Glu Ile Ile Asn Ala Asp Tyr Ala Phe Val Ile His
1310 1315 1320

Thr Thr Asn Pro Ser Ser Gly Asp Ser Ser Glu Ile Tyr Ala Glu
1325 1330 1335

Val Val Lys Gly Leu Gly Glu Thr Leu Val Gly Ala Tyr Pro Gly
1340 1345 1350

Arg Ala Leu Ser Phe Val Cys Lys Lys Asn Asp Leu Lys Ser Pro
1355 1360 1365

Arg Val Leu Gly Tyr Pro Ser Lys Pro Ile Gly Leu Phe Ile Arg
1370 1375 1380

Arg Ser Ile Ile Phe Arg Ser Asp Ser Asn Gly Glu Asp Leu Glu
1385 1390 1395

Gly Tyr Ala Gly Ala Gly Leu Tyr Asp Ser Val Pro Met Asp Glu
1400 1405 1410

Ala Glu Lys Val Val Leu Asp Tyr Ser Ser Asp His Leu Ile Thr
1415 1420 1425

Asp Gly His Phe Gln Gln Ser Ile Leu Ser Ser Ile Ala Arg Ala
1430 1435 1440

Gly Cys Glu Ile Glu Glu Leu Phe Gly Ser Ala Gln Asp Ile Glu
Page 34

1445

1450

1455

Gly Val Val Arg Asp Gly Lys Ile Tyr Val Val Gln Thr Arg Pro
1460 1465 1470

Gln Met
1475

<210> 8

<211> 4200

<212> DNA

<213> *Arabidopsis thaliana*

<220>

<221> CDS

<222> (1)..(4200)

<223>

<300>

<308> EMBL / AF312027

<309> 2001-01-08

<400> 8		
atg agt aac tct gta gtg cat aac tta ctt aac cgg ggt ttg att cgt		48
Met Ser Asn Ser Val Val His Asn Leu Leu Asn Arg Gly Leu Ile Arg		
1 5 10 15		
cct ctt aac ttt gaa cat caa aac aag ctc aac tcc tct gtg tac caa		96
Pro Leu Asn Phe Glu His Gln Asn Lys Leu Asn Ser Ser Val Tyr Gln		
20 25 30		
act tca aca gca aat ccg gct ctt ggc aag att ggc aga tca aaa ctt		144
Thr Ser Thr Ala Asn Pro Ala Leu Gly Lys Ile Gly Arg Ser Lys Leu		
35 40 45		
tac ggg aaa ggt ctt aag cag gca gga cgc agt ctg gtc act gaa aca		192
Tyr Gly Lys Gly Leu Lys Gln Ala Gly Arg Ser Leu Val Thr Glu Thr		
50 55 60		
gga gga aga cct ctc tca ttt gtt cca cga gct gtc ctt gcc atg gat		240
Gly Gly Arg Pro Leu Ser Phe Val Pro Arg Ala Val Leu Ala Met Asp		
65 70 75 80		
cct cag gca gcc gag aaa ttt agt ctt gac gga aat atc gat tta ctg		288
Pro Gln Ala Ala Glu Lys Phe Ser Leu Asp Gly Asn Ile Asp Leu Leu		
85 90 95		

gtt gaa gtc act tct aca act gta aga gaa gta aat atc cag ata gct	336
Val Glu Val Thr Ser Thr Val Arg Glu Val Asn Ile Gln Ile Ala	
100 105 110	
tat aca agt gac aca ttg ttc cta cac tgg ggt gca att ctt gac aac	384
Tyr Thr Ser Asp Thr Leu Phe Leu His Trp Gly Ala Ile Leu Asp Asn	
115 120 125	
aaa gaa aat tgg gtt cta cct tct cgc tct ccg gat aga act caa aac	432
Lys Glu Asn Trp Val Leu Pro Ser Arg Ser Pro Asp Arg Thr Gln Asn	
130 135 140	
ttc aag aac agt gcg ctt aga act cca ttt gtg aaa tcc ggt ggc aat	480
Phe Lys Asn Ser Ala Leu Arg Thr Pro Phe Val Lys Ser Gly Gly Asn	
145 150 155 160	
tct cac ctt aaa cta gag ata gat gat cct gcc ata cac gct att gag	528
Ser His Leu Lys Leu Glu Ile Asp Asp Pro Ala Ile His Ala Ile Glu	
165 170 175	
ttc ctt ata ttt gac gaa agt cggt aac aaa tgg tat aaa aat aat ggt	576
Phe Leu Ile Phe Asp Glu Ser Arg Asn Lys Trp Tyr Lys Asn Asn Gly	
180 185 190	
cag aat ttt cat ata aac tta cca acg gaa agg aat gtg aaa caa aat	624
Gln Asn Phe His Ile Asn Leu Pro Thr Glu Arg Asn Val Lys Gln Asn	
195 200 205	
gtt tct gtt cct gaa gat ctt gta cag atc caa gca tat ctt aga tgg	672
Val Ser Val Pro Glu Asp Leu Val Gln Ile Gln Ala Tyr Leu Arg Trp	
210 215 220	
gaa cgt aag ggt aaa caa atg tac aac cct gag aaa gag aag gag gag	720
Glu Arg Lys Gly Lys Gln Met Tyr Asn Pro Glu Lys Glu Lys Glu Glu	
225 230 235 240	
tat gaa gcc gcc cggt acg gag cta cgg gag gaa atg atg cga ggt gct	768
Tyr Glu Ala Ala Arg Thr Glu Leu Arg Glu Glu Met Met Arg Gly Ala	
245 250 255	
tca gtg gaa gat ctc aga gca aag ctg ttg aag aaa gat aac agt aat	816
Ser Val Glu Asp Leu Arg Ala Lys Leu Leu Lys Lys Asp Asn Ser Asn	
260 265 270	
gaa tcc cca aaa tct aat ggg aca tca tcc agt gga cggt gag gaa aag	864
Glu Ser Pro Lys Ser Asn Gly Thr Ser Ser Ser Gly Arg Glu Glu Lys	
275 280 285	
aaa aaa gtt tcc aag caa cca gag cgt aaa aaa aat tat aac act gac	912
Lys Lys Val Ser Lys Gln Pro Glu Arg Lys Lys Asn Tyr Asn Thr Asp	
290 295 300	
aag atc cag cgc aag gga agg gac ctg act aag ctt atc tat aag cat	960
Lys Ile Gln Arg Lys Gly Arg Asp Leu Thr Lys Leu Ile Tyr Lys His	
305 310 315 320	
gtt gct gat ttt gtt gaa cca gaa tcc aaa tcc tca tct gaa cca cggt	1008
Val Ala Asp Phe Val Glu Pro Glu Ser Lys Ser Ser Glu Pro Arg	
325 330 335	
tcc tta aca act ctg gag ata tac gcc aaa gca aag gag gaa caa gaa	1056
Ser Leu Thr Thr Leu Glu Ile Tyr Ala Lys Ala Lys Glu Glu Gln Glu	
340 345 350	

acc act cca gtc ttt agc aag aaa aca ttc aag ctt gaa ggc agt gcg Thr Thr Pro Val Phe Ser Lys Lys Thr Phe Lys Leu Glu Gly Ser Ala 355 360 365	1104
att ttg gtg ttt gtt act aaa ctt tcc gga aag acg aaa att cat gtg Ile Leu Val Phe Val Thr Lys Leu Ser Gly Lys Thr Lys Ile His Val 370 375 380	1152
gca act gat ttt aaa gag ccg gtt acc ctt cac tgg gct ttg tct caa Ala Thr Asp Phe Lys Glu Pro Val Thr Leu His Trp Ala Leu Ser Gln 385 390 395 400	1200
aag ggt gga gaa tgg ttg gac cca cct tca gat ata ctg cca cca aac Lys Gly Gly Glu Trp Leu Asp Pro Pro Ser Asp Ile Leu Pro Pro Asn 405 410 415	1248
tct ttg cca gta cgt ggt gct gtt gat aca aaa ctg acc atc act tca Ser Leu Pro Val Arg Gly Ala Val Asp Thr Lys Leu Thr Ile Thr Ser 420 425 430	1296
aca gat ctt cct agt ccg gtt caa act ttt gag ctg gaa ata gaa ggt Thr Asp Leu Pro Ser Pro Val Gln Thr Phe Glu Leu Glu Ile Glu Gly 435 440 445	1344
gac agc tac aag ggc atg ccg ttt gta ctc aat gct ggt gaa agg tgg Asp Ser Tyr Lys Gly Met Pro Phe Val Leu Asn Ala Gly Glu Arg Trp 450 455 460	1392
att aaa aat aat gac agt gac ttt tat gtg gac ttt gct aaa gaa gaa Ile Lys Asn Asn Asp Ser Asp Phe Tyr Val Asp Phe Ala Lys Glu Glu 465 470 475 480	1440
aaa cat gtt cag aag gat tat ggc gat gga aag ggt aca gcc aag cat Lys His Val Gln Lys Asp Tyr Gly Asp Gly Lys Gly Thr Ala Lys His 485 490 495	1488
tta ctg gac aaa atc gca gat ttg gag agt gag gcc cag aag tct ttc Leu Leu Asp Lys Ile Ala Asp Leu Glu Ser Glu Ala Gln Lys Ser Phe 500 505 510	1536
atg cat cga ttc aac att gca gca gat ctt gtg gac gag gca aaa agt Met His Arg Phe Asn Ile Ala Ala Asp Leu Val Asp Glu Ala Lys Ser 515 520 525	1584
gct ggt caa ctg ggc ttt gca ggg atc cta gtc tgg atg agg ttt atg Ala Gly Gln Leu Gly Phe Ala Gly Ile Leu Val Trp Met Arg Phe Met 530 535 540	1632
gct aca aga cag ctt gtg tgg aac aaa aac tat aat gtt aag cca agg Ala Thr Arg Gln Leu Val Trp Asn Lys Asn Tyr Asn Val Lys Pro Arg 545 550 555 560	1680
gag ata agc aaa gcg cag gat aga ctg act gac ctt ctc cag gac gtt Glu Ile Ser Lys Ala Gln Asp Arg Leu Thr Asp Leu Leu Gln Asp Val 565 570 575	1728
tat gca agt tat cca gag tac aga gaa ctt ttg cgg atg ata atg tct Tyr Ala Ser Tyr Pro Glu Tyr Arg Glu Leu Leu Arg Met Ile Met Ser 580 585 590	1776
act gta ggt cga gga ggt gaa gga gat gtc ggg caa cga atc cgt gac Thr Val Gly Arg Gly Glu Gly Asp Val Gly Gln Arg Ile Arg Asp 595 600 605	1824

gaa att cta gtc atc cag cgg aaa aat gac tgc aag ggt gga att atg Glu Ile Leu Val Ile Gln Arg Lys Asn Asp Cys Lys Gly Gly Ile Met 610 615 620	1872
gag gaa tgg cat cag aag ttg cat aac aac act agt cca gat gat gtt Glu Glu Trp His Gln Lys Leu His Asn Asn Thr Ser Pro Asp Asp Val 625 630 635 640	1920
gtc atc tgt cag gca ttg atg gat tat atc aaa agt gac ttt gac tta Val Ile Cys Gln Ala Leu Met Asp Tyr Ile Lys Ser Asp Phe Asp Leu 645 650 655	1968
agt gtt tac tgg aag acc ttg aac gat aat ggc ata acc aaa gag cga Ser Val Tyr Trp Lys Thr Leu Asn Asp Asn Gly Ile Thr Lys Glu Arg 660 665 670	2016
ctc tta agt tat gat cgt gct ata cat tct gaa cca aat ttt aga gga Leu Leu Ser Tyr Asp Arg Ala Ile His Ser Glu Pro Asn Phe Arg Gly 675 680 685	2064
gaa caa aaa gac ggt ctt ttg cgt gat ctt gga cac tac atg agg act Glu Gln Lys Asp Gly Leu Leu Arg Asp Leu Gly His Tyr Met Arg Thr 690 695 700	2112
tta aag gct gtt cat tca ggg gca gac ctt gag tcg gct ata caa aat Leu Lys Ala Val His Ser Gly Ala Asp Leu Glu Ser Ala Ile Gln Asn 705 710 715 720	2160
tgc atg ggc tac caa gat gac ggt gaa ggt ttc atg gtt ggg gtg cag Cys Met Gly Tyr Gln Asp Asp Gly Glu Gly Phe Met Val Gly Val Gln 725 730 735	2208
ata aat cct gta tca gga ttg cct tct gga tat cca gac ttg ctt cgt Ile Asn Pro Val Ser Gly Leu Pro Ser Gly Tyr Pro Asp Leu Leu Arg 740 745 750	2256
ttc gtc cta gaa cat gtt gaa gaa aag aat gta gag cca ctt ctt gag Phe Val Leu Glu His Val Glu Glu Lys Asn Val Glu Pro Leu Leu Glu 755 760 765	2304
ggt ttg ctt gaa gct cgt caa gag cta agg cca ctt ctg ctg aag tcc Gly Leu Leu Glu Ala Arg Gln Glu Leu Arg Pro Leu Leu Leu Lys Ser 770 775 780	2352
cat gac cgc ctc aag gat ctg tta ttc ttg gac ctc gct ctt gat tct His Asp Arg Leu Lys Asp Leu Leu Phe Leu Asp Leu Ala Leu Asp Ser 785 790 795 800	2400
act gtc aga aca gcg att gaa aga gga tat gag caa ttg aat gat gct Thr Val Arg Thr Ala Ile Glu Arg Gly Tyr Glu Gln Leu Asn Asp Ala 805 810 815	2448
gga cct gag aaa atc atg tac ttc atc agc cta gtt ctt gaa aat ctt Gly Pro Glu Lys Ile Met Tyr Phe Ile Ser Leu Val Leu Glu Asn Leu 820 825 830	2496
gcc ctc tct tca gat gac aat gaa gac ctt ata tac tgc ttg aag gga Ala Leu Ser Ser Asp Asp Asn Glu Asp Leu Ile Tyr Cys Leu Lys Gly 835 840 845	2544
tgg caa ttt gcc ctc gac atg tgc aag agc aaa aaa gat cac tgg gct Trp Gln Phe Ala Leu Asp Met Cys Lys Ser Lys Lys Asp His Trp Ala 850 855 860	2592

ctg tat gca aaa tct gtt ctt gac aga agc cga cta gca ctg gca agc Leu Tyr Ala Lys Ser Val Leu Asp Arg Ser Arg Leu Ala Leu Ala Ser 865 870 875 880	2640
aaa gct gag agg tac ctt gaa att ctg caa cca tcg gct gaa tat ctt Lys Ala Glu Arg Tyr Leu Glu Ile Leu Gln Pro Ser Ala Glu Tyr Leu 885 890 895	2688
gga tct tgt ctt gga gtc gat cag tcg gct gtt agt ata ttt act gaa Gly Ser Cys Leu Gly Val Asp Gln Ser Ala Val Ser Ile Phe Thr Glu 900 905 910	2736
gag atc att cga gct gga tct gca gca gca ttg tcg tca ctt gtt aac Glu Ile Ile Arg Ala Gly Ser Ala Ala Leu Ser Ser Leu Val Asn 915 920 925	2784
cga ctt gac cca gtt ctt agg aag act gct aac ttg gga agt tgg cag Arg Leu Asp Pro Val Leu Arg Lys Thr Ala Asn Leu Gly Ser Trp Gln 930 935 940	2832
gtt att agt cct gta gag gtc gtc gga tat gtc att gtt gtg gac gaa Val Ile Ser Pro Val Glu Val Val Gly Tyr Val Ile Val Val Asp Glu 945 950 955 960	2880
ttg ctc act gta cag aat aaa acc tac gat aga cct aca att ata gtt Leu Leu Thr Val Gln Asn Lys Thr Tyr Asp Arg Pro Thr Ile Ile Val 965 970 975	2928
gca aac aga gtg aga gga gag gag gaa atc cct gat ggt gca gtt gcg Ala Asn Arg Val Arg Gly Glu Glu Ile Pro Asp Gly Ala Val Ala 980 985 990	2976
gta ctg aca cct gac atg ccg gat gta cta tct cat gtt tct gtt cga Val Leu Thr Pro Asp Met Pro Asp Val Leu Ser His Val Ser Val Arg 995 1000 1005	3024
gca aga aat gga aag atc tgc ttt gcc aca tgt ttt gat tct ggt Ala Arg Asn Gly Lys Ile Cys Phe Ala Thr Cys Phe Asp Ser Gly 1010 1015 1020	3069
atc tta tct gac ctc caa gga aaa gat gga aaa ctg ttg agc cta Ile Leu Ser Asp Leu Gln Gly Lys Asp Gly Lys Leu Leu Ser Leu 1025 1030 1035	3114
caa cca acc tct gca gat gta gtc tat aaa gag gta aac gat agt Gln Pro Thr Ser Ala Asp Val Val Tyr Lys Glu Val Asn Asp Ser 1040 1045 1050	3159
gag ctt tcg agt cca agt tca gac aac ctg gaa gat gcc cct cca Glu Leu Ser Ser Pro Ser Ser Asp Asn Leu Glu Asp Ala Pro Pro 1055 1060 1065	3204
agt att tct ttg gtc aag aaa cag ttt gcg ggt aga tat gct ata Ser Ile Ser Leu Val Lys Lys Gln Phe Ala Gly Arg Tyr Ala Ile 1070 1075 1080	3249
tca tct gag gag ttc aca agt gac ttg gtt ggt gct aaa tca aga Ser Ser Glu Glu Phe Thr Ser Asp Leu Val Gly Ala Lys Ser Arg 1085 1090 1095	3294
aat atc ggg tat ctg aaa gga aaa gtt cct tct tgg gtt ggt atc Asn Ile Gly Tyr Leu Lys Gly Lys Val Pro Ser Trp Val Gly Ile 1100 1105 1110	3339

cca	act	tca	gtt	gcg	ttg	cca	ttt	ggt	gtt	ttt	gag	aag	gtt	atc	3384
Pro	Thr	Ser	Val	Ala	Leu	Pro	Phe	Gly	Val	Phe	Glu	Lys	Val	Ile	
1115						1120					1125				
tcc	gaa	aag	gcg	aat	cag	gcg	gtg	aac	gat	aaa	ttg	cta	gta	ttg	3429
Ser	Glu	Lys	Ala	Asn	Gln	Ala	Val	Asn	Asp	Lys	Leu	Leu	Val	Leu	
1130						1135					1140				
aag	aaa	act	ctt	gat	gag	gga	gac	caa	ggt	gct	ctg	aag	gaa	atc	3474
Lys	Lys	Thr	Leu	Asp	Glu	Gly	Asp	Gln	Gly	Ala	Leu	Lys	Glu	Ile	
1145						1150					1155				
cgg	cag	aca	ctg	ttg	ggg	cta	gtt	gca	ccc	cca	gaa	ctg	gtt	gaa	3519
Arg	Gln	Thr	Leu	Leu	Gly	Leu	Val	Ala	Pro	Pro	Glu	Leu	Val	Glu	
1160						1165					1170				
gaa	ctg	aaa	agt	act	atg	aaa	agt	tct	gac	atg	cca	tgg	ccg	ggt	3564
Glu	Leu	Lys	Ser	Thr	Met	Lys	Ser	Ser	Asp	Met	Pro	Trp	Pro	Gly	
1175						1180					1185				
gat	gaa	ggt	gaa	cag	aga	tgg	gag	caa	gct	tgg	gca	gcc	att	aaa	3609
Asp	Glu	Gly	Glu	Gln	Arg	Trp	Glu	Gln	Ala	Trp	Ala	Ala	Ile	Lys	
1190						1195					1200				
aag	gtc	tgg	gct	tcg	aaa	tgg	aac	gag	aga	gca	tac	ttc	agc	acg	3654
Lys	Val	Trp	Ala	Ser	Lys	Trp	Asn	Glu	Arg	Ala	Tyr	Phe	Ser	Thr	
1205						1210					1215				
agg	aaa	gta	aaa	ctg	gat	cat	gac	tat	ctc	tgc	atg	gct	gtt	ttg	3699
Arg	Lys	Val	Lys	Leu	Asp	His	Asp	Tyr	Leu	Cys	Met	Ala	Val	Leu	
1220						1225					1230				
gtc	caa	gaa	gtc	atc	aat	gcg	gat	tac	gca	ttc	gtc	att	cac	aca	3744
Val	Gln	Glu	Val	Ile	Asn	Ala	Asp	Tyr	Ala	Phe	Val	Ile	His	Thr	
1235						1240					1245				
act	aat	cca	tct	tct	gga	gat	tca	tca	gag	att	tat	gcc	gag	gtg	3789
Thr	Asn	Pro	Ser	Ser	Gly	Asp	Ser	Ser	Glu	Ile	Tyr	Ala	Glu	Val	
1250						1255					1260				
gtc	aaa	ggc	ctt	ggg	gaa	act	ctt	gta	gga	gca	tat	ccc	ggt	cg	3834
Val	Lys	Gly	Leu	Gly	Glu	Thr	Leu	Val	Gly	Ala	Tyr	Pro	Gly	Arg	
1265						1270					1275				
tct	ctg	agt	ttc	atc	tgc	aag	aaa	aac	aac	ctt	gat	tcg	cct	ctg	3879
Ser	Leu	Ser	Phe	Ile	Cys	Lys	Lys	Asn	Asn	Leu	Asp	Ser	Pro	Leu	
1280						1285					1290				
gtg	ttg	ggc	tac	cca	agc	aaa	ccg	att	ggg	ctg	ttc	ata	aga	cgt	3924
Val	Leu	Gly	Tyr	Pro	Ser	Lys	Pro	Ile	Gly	Leu	Phe	Ile	Arg	Arg	
1295						1300					1305				
tca	atc	atc	ttc	aga	tct	gat	tcc	aat	gga	gaa	gat	ttt	gaa	ggt	3969
Ser	Ile	Ile	Phe	Arg	Ser	Asp	Ser	Asn	Gly	Glu	Asp	Leu	Glu	Gly	
1310						1315					1320				
tat	gca	ggt	gca	ggc	ctc	tac	gac	agt	gta	cca	atg	gac	gag	gaa	4014
Tyr	Ala	Gly	Ala	Gly	Leu	Tyr	Asp	Ser	Val	Pro	Met	Asp	Glu	Glu	
1325						1330					1335				
gac	caa	gtc	gtg	ctc	gat	tac	aca	aca	gat	cct	ctg	atc	act	gac	4059
Asp	Gln	Val	Val	Leu	Asp	Tyr	Thr	Thr	Asp	Pro	Leu	Ile	Thr	Asp	
1340						1345					1350				

ttg	agc	ttc	cag	aaa	aag	gtt	ctc	tca	gac	att	gca	cgc	gct	gga	4104
Leu	Ser	Phe	Gln	Lys	Lys	Val	Leu	Ser	Asp	Ile	Ala	Arg	Ala	Gly	
1355						1360					1365				
gat	gcc	att	gag	aaa	ctc	tat	gga	act	gca	cag	gac	att	gaa	ggt	4149
Asp	Ala	Ile	Glu	Lys	Leu	Tyr	Gly	Thr	Ala	Gln	Asp	Ile	Glu	Gly	
1370						1375					1380				
gtg	atc	aga	gac	ggg	aag	ctc	tat	gtc	gtc	cag	aca	cga	cca	caa	4194
Val	Ile	Arg	Asp	Gly	Lys	Leu	Tyr	Val	Val	Gln	Thr	Arg	Pro	Gln	
1385						1390					1395				
gtg	tga														4200
Val															

<210> 9

<211> 1399

<212> PRT

<213> *Arabidopsis thaliana*

<400> 9

Met	Ser	Asn	Ser	Val	Val	His	Asn	Leu	Leu	Asn	Arg	Gly	Leu	Ile	Arg
1				5				10					15		

Pro	Leu	Asn	Phe	Glu	His	Gln	Asn	Lys	Leu	Asn	Ser	Ser	Val	Tyr	Gln
			20				25						30		

Thr	Ser	Thr	Ala	Asn	Pro	Ala	Leu	Gly	Lys	Ile	Gly	Arg	Ser	Lys	Leu
			35				40					45			

Tyr	Gly	Lys	Gly	Leu	Lys	Gln	Ala	Gly	Arg	Ser	Leu	Val	Thr	Glu	Thr
	50				55				60						

Gly	Gly	Arg	Pro	Leu	Ser	Phe	Val	Pro	Arg	Ala	Val	Leu	Ala	Met	Asp
	65			70			75						80		

Pro	Gln	Ala	Ala	Glu	Lys	Phe	Ser	Leu	Asp	Gly	Asn	Ile	Asp	Leu	Leu
	85						90						95		

Val	Glu	Val	Thr	Ser	Thr	Val	Arg	Glu	Val	Asn	Ile	Gln	Ile	Ala	
	100					105						110			

Tyr	Thr	Ser	Asp	Thr	Leu	Phe	Leu	His	Trp	Gly	Ala	Ile	Leu	Asp	Asn
	115							120					125		

Lys	Glu	Asn	Trp	Val	Leu	Pro	Ser	Arg	Ser	Pro	Asp	Arg	Thr	Gln	Asn
	130					135					140				

Phe Lys Asn Ser Ala Leu Arg Thr Pro Phe Val Lys Ser Gly Gly Asn
145 150 155 160

Ser His Leu Lys Leu Glu Ile Asp Asp Pro Ala Ile His Ala Ile Glu
165 170 175

Phe Leu Ile Phe Asp Glu Ser Arg Asn Lys Trp Tyr Lys Asn Asn Gly
180 185 190

Gln Asn Phe His Ile Asn Leu Pro Thr Glu Arg Asn Val Lys Gln Asn
195 200 205

Val Ser Val Pro Glu Asp Leu Val Gln Ile Gln Ala Tyr Leu Arg Trp
210 215 220

Glu Arg Lys Gly Lys Gln Met Tyr Asn Pro Glu Lys Glu Lys Glu Glu
225 230 235 240

Tyr Glu Ala Ala Arg Thr Glu Leu Arg Glu Glu Met Met Arg Gly Ala
245 250 255

Ser Val Glu Asp Leu Arg Ala Lys Leu Leu Lys Lys Asp Asn Ser Asn
260 265 270

Glu Ser Pro Lys Ser Asn Gly Thr Ser Ser Ser Gly Arg Glu Glu Lys
275 280 285

Lys Lys Val Ser Lys Gln Pro Glu Arg Lys Lys Asn Tyr Asn Thr Asp
290 295 300

Lys Ile Gln Arg Lys Gly Arg Asp Leu Thr Lys Leu Ile Tyr Lys His
305 310 315 320

Val Ala Asp Phe Val Glu Pro Glu Ser Lys Ser Ser Ser Glu Pro Arg
325 330 335

Ser Leu Thr Thr Leu Glu Ile Tyr Ala Lys Ala Lys Glu Glu Gln Glu
340 345 350

Thr Thr Pro Val Phe Ser Lys Lys Thr Phe Lys Leu Glu Gly Ser Ala
355 360 365

Ile Leu Val Phe Val Thr Lys Leu Ser Gly Lys Thr Lys Ile His Val
370 375 380

Ala Thr Asp Phe Lys Glu Pro Val Thr Leu His Trp Ala Leu Ser Gln
385 390 395 400

Lys Gly Gly Glu Trp Leu Asp Pro Pro Ser Asp Ile Leu Pro Pro Asn
405 410 415

Ser Leu Pro Val Arg Gly Ala Val Asp Thr Lys Leu Thr Ile Thr Ser
420 425 430

Thr Asp Leu Pro Ser Pro Val Gln Thr Phe Glu Leu Glu Ile Glu Gly
435 440 445

Asp Ser Tyr Lys Gly Met Pro Phe Val Leu Asn Ala Gly Glu Arg Trp
450 455 460

Ile Lys Asn Asn Asp Ser Asp Phe Tyr Val Asp Phe Ala Lys Glu Glu
465 470 475 480

Lys His Val Gln Lys Asp Tyr Gly Asp Gly Lys Gly Thr Ala Lys His
485 490 495

Leu Leu Asp Lys Ile Ala Asp Leu Glu Ser Glu Ala Gln Lys Ser Phe
500 505 510

Met His Arg Phe Asn Ile Ala Ala Asp Leu Val Asp Glu Ala Lys Ser
515 520 525

Ala Gly Gln Leu Gly Phe Ala Gly Ile Leu Val Trp Met Arg Phe Met
530 535 540

Ala Thr Arg Gln Leu Val Trp Asn Lys Asn Tyr Asn Val Lys Pro Arg
545 550 555 560

Glu Ile Ser Lys Ala Gln Asp Arg Leu Thr Asp Leu Leu Gln Asp Val
565 570 575

Tyr Ala Ser Tyr Pro Glu Tyr Arg Glu Leu Leu Arg Met Ile Met Ser
580 585 590

Thr Val Gly Arg Gly Gly Glu Gly Asp Val Gly Gln Arg Ile Arg Asp
595 600 605

Glu Ile Leu Val Ile Gln Arg Lys Asn Asp Cys Lys Gly Gly Ile Met
610 615 620

Glu Glu Trp His Gln Lys Leu His Asn Asn Thr Ser Pro Asp Asp Val
625 630 635 640

Val Ile Cys Gln Ala Leu Met Asp Tyr Ile Lys Ser Asp Phe Asp Leu
645 650 655

Ser Val Tyr Trp Lys Thr Leu Asn Asp Asn Gly Ile Thr Lys Glu Arg
660 665 670

Leu Leu Ser Tyr Asp Arg Ala Ile His Ser Glu Pro Asn Phe Arg Gly
675 680 685

Glu Gln Lys Asp Gly Leu Leu Arg Asp Leu Gly His Tyr Met Arg Thr
690 695 700

Leu Lys Ala Val His Ser Gly Ala Asp Leu Glu Ser Ala Ile Gln Asn
705 710 715 720

Cys Met Gly Tyr Gln Asp Asp Gly Glu Gly Phe Met Val Gly Val Gln
725 730 735

Ile Asn Pro Val Ser Gly Leu Pro Ser Gly Tyr Pro Asp Leu Leu Arg
740 745 750

Phe Val Leu Glu His Val Glu Glu Lys Asn Val Glu Pro Leu Leu Glu
755 760 765

Gly Leu Leu Glu Ala Arg Gln Glu Leu Arg Pro Leu Leu Leu Lys Ser
770 775 780

His Asp Arg Leu Lys Asp Leu Leu Phe Leu Asp Leu Ala Leu Asp Ser
785 790 795 800

Thr Val Arg Thr Ala Ile Glu Arg Gly Tyr Glu Gln Leu Asn Asp Ala
805 810 815

Gly Pro Glu Lys Ile Met Tyr Phe Ile Ser Leu Val Leu Glu Asn Leu
820 825 830

Ala Leu Ser Ser Asp Asp Asn Glu Asp Leu Ile Tyr Cys Leu Lys Gly
835 840 845

Trp Gln Phe Ala Leu Asp Met Cys Lys Ser Lys Lys Asp His Trp Ala
850 855 860

Leu Tyr Ala Lys Ser Val Leu Asp Arg Ser Arg Leu Ala Leu Ala Ser
865 870 875 880

Lys Ala Glu Arg Tyr Leu Glu Ile Leu Gln Pro Ser Ala Glu Tyr Leu
885 890 895

Gly Ser Cys Leu Gly Val Asp Gln Ser Ala Val Ser Ile Phe Thr Glu
900 905 910

Glu Ile Ile Arg Ala Gly Ser Ala Ala Ala Leu Ser Ser Leu Val Asn
915 920 925

Arg Leu Asp Pro Val Leu Arg Lys Thr Ala Asn Leu Gly Ser Trp Gln
930 935 940

Val Ile Ser Pro Val Glu Val Val Gly Tyr Val Ile Val Val Asp Glu
945 950 955 960

Leu Leu Thr Val Gln Asn Lys Thr Tyr Asp Arg Pro Thr Ile Ile Val
965 970 975

Ala Asn Arg Val Arg Gly Glu Glu Ile Pro Asp Gly Ala Val Ala
980 985 990

Val Leu Thr Pro Asp Met Pro Asp Val Leu Ser His Val Ser Val Arg
995 1000 1005

Ala Arg Asn Gly Lys Ile Cys Phe Ala Thr Cys Phe Asp Ser Gly
1010 1015 1020

Ile Leu Ser Asp Leu Gln Gly Lys Asp Gly Lys Leu Leu Ser Leu
1025 1030 1035

Gln Pro Thr Ser Ala Asp Val Val Tyr Lys Glu Val Asn Asp Ser
1040 1045 1050

Glu Leu Ser Ser Pro Ser Ser Asp Asn Leu Glu Asp Ala Pro Pro
1055 1060 1065

Ser Ile Ser Leu Val Lys Lys Gln Phe Ala Gly Arg Tyr Ala Ile
1070 1075 1080

Ser Ser Glu Glu Phe Thr Ser Asp Leu Val Gly Ala Lys Ser Arg
1085 1090 1095

Asn Ile Gly Tyr Leu Lys Gly Lys Val Pro Ser Trp Val Gly Ile
1100 1105 1110

Pro Thr Ser Val Ala Leu Pro Phe Gly Val Phe Glu Lys Val Ile
1115 1120 1125

Ser Glu Lys Ala Asn Gln Ala Val Asn Asp Lys Leu Leu Val Leu
1130 1135 1140

Lys Lys Thr Leu Asp Glu Gly Asp Gln Gly Ala Leu Lys Glu Ile
1145 1150 1155

Arg Gln Thr Leu Leu Gly Leu Val Ala Pro Pro Glu Leu Val Glu
1160 1165 1170

Glu Leu Lys Ser Thr Met Lys Ser Ser Asp Met Pro Trp Pro Gly
1175 1180 1185

Asp Glu Gly Glu Gln Arg Trp Glu Gln Ala Trp Ala Ala Ile Lys
1190 1195 1200

Lys Val Trp Ala Ser Lys Trp Asn Glu Arg Ala Tyr Phe Ser Thr
1205 1210 1215

Arg Lys Val Lys Leu Asp His Asp Tyr Leu Cys Met Ala Val Leu
1220 1225 1230

Val Gln Glu Val Ile Asn Ala Asp Tyr Ala Phe Val Ile His Thr
1235 1240 1245

Thr Asn Pro Ser Ser Gly Asp Ser Ser Glu Ile Tyr Ala Glu Val
1250 1255 1260

Val Lys Gly Leu Gly Glu Thr Leu Val Gly Ala Tyr Pro Gly Arg
1265 1270 1275

Ser Leu Ser Phe Ile Cys Lys Lys Asn Asn Leu Asp Ser Pro Leu
1280 1285 1290

Val Leu Gly Tyr Pro Ser Lys Pro Ile Gly Leu Phe Ile Arg Arg
1295 1300 1305

Ser Ile Ile Phe Arg Ser Asp Ser Asn Gly Glu Asp Leu Glu Gly
1310 1315 1320

Tyr Ala Gly Ala Gly Leu Tyr Asp Ser Val Pro Met Asp Glu Glu
1325 1330 1335

Asp Gln Val Val Leu Asp Tyr Thr Thr Asp Pro Leu Ile Thr Asp
1340 1345 1350

Leu Ser Phe Gln Lys Lys Val Leu Ser Asp Ile Ala Arg Ala Gly
1355 1360 1365

Asp Ala Ile Glu Lys Leu Tyr Gly Thr Ala Gln Asp Ile Glu Gly
1370 1375 1380

Val Ile Arg Asp Gly Lys Leu Tyr Val Val Gln Thr Arg Pro Gln
1385 1390 1395

val

<210> 10
<211> 4851
<212> DNA
<213> **Solanum tuberosum**

<220>
<221> CDS
<222> (105)..(4499)
<223>

<300>
<308> EMBL / Y09533
<309> 1998-07-30

<400> 10
catcttcatc gaatttctcg aagcttcttc gctaatttcc tggtttcttc actcaaaatc 60
gacgtttcta gctgaacttg agtgaattaa gccagtggga ggat atg agt aat tcc 116
Met Ser Asn Ser
1
tta ggg aat aac ttg ctg tac cag gga ttc cta acc tca aca gtg ttg 164
Leu Gly Asn Asn Leu Leu Tyr Gln Gly Phe Leu Thr Ser Thr Val Leu
5 10 15 20
gaa cat aaa agt aga atc agt cct cct tgt gtt gga ggc aat tct ttg 212
Glu His Lys Ser Arg Ile Ser Pro Pro Cys Val Gly Gly Asn Ser Leu
25 30 35
ttt caa caa caa gtg atc tcg aaa tca cct tta tca act gag ttt cga 260
Phe Gln Gln Val Ile Ser Lys Ser Pro Leu Ser Thr Glu Phe Arg
40 45 50
ggt aac agg tta aag gtg cag aaa aag aaa ata cct atg gaa aag aag 308
Gly Asn Arg Leu Lys Val Gln Lys Lys Lys Ile Pro Met Glu Lys Lys
55 60 65
cgt gct ttt tct agt tct cct cat gct gta ctt acc act gat acc tct 356
Arg Ala Phe Ser Ser Ser Pro His Ala Val Leu Thr Thr Asp Thr Ser
70 75 80
tct gag cta gca gaa aag ttc agt cta ggg ggg aat att gag cta cag 404
Ser Glu Leu Ala Glu Lys Phe Ser Leu Gly Gly Asn Ile Glu Leu Gln
85 90 95 100

gtt gat gtt agg cct ccc act tca ggt gat gtg tcc ttt gtg gat ttt Val Asp Val Arg Pro Pro Thr Ser Gly Asp Val Ser Phe Val Asp Phe 105 110 115	452
caa gta aca aat ggt agt gat aaa ctg ttt ttg cac tgg ggg gca gta Gln Val Thr Asn Gly Ser Asp Lys Leu Phe Leu His Trp Gly Ala Val 120 125 130	500
aaa ttc ggg aaa gaa aca tgg tct ctt ccg aat gat cgt cca gat ggg Lys Phe Gly Lys Glu Thr Trp Ser Leu Pro Asn Asp Arg Pro Asp Gly 135 140 145	548
acc aaa gtg tac aag aac aaa gca ctt aga act cca ttt gtt aaa tct Thr Lys Val Tyr Lys Asn Lys Ala Leu Arg Thr Pro Phe Val Lys Ser 150 155 160	596
ggc tct aac tcc atc ctg aga ctg gag ata cga gac act gct atc gaa Gly Ser Asn Ser Ile Leu Arg Leu Glu Ile Arg Asp Thr Ala Ile Glu 165 170 175 180	644
gct att gag ttt ctc ata tac gat gaa gcc cac gat aaa tgg ata aag Ala Ile Glu Phe Leu Ile Tyr Asp Glu Ala His Asp Lys Trp Ile Lys 185 190 195	692
aat aat ggt ggt aat ttt cgt gtc aaa ttg tca aga aaa gag ata cga Asn Asn Gly Gly Asn Phe Arg Val Lys Leu Ser Arg Lys Glu Ile Arg 200 205 210	740
ggc cca gat gtt tct gtt cct gag gag ctt gta cag atc caa tca tat Gly Pro Asp Val Ser Val Pro Glu Glu Leu Val Gln Ile Gln Ser Tyr 215 220 225	788
ttg agg tgg gag agg aag gga aaa cag aat tac ccc cct gag aaa gag Leu Arg Trp Glu Arg Lys Gly Lys Gln Asn Tyr Pro Pro Glu Lys Glu 230 235 240	836
aag gag gaa tat gag gct gct cga act gtg cta cag gag gaa ata gct Lys Glu Glu Tyr Glu Ala Ala Arg Thr Val Leu Gln Glu Glu Ile Ala 245 250 255 260	884
cgt ggt gct tcc ata cag gac att cga gca agg cta aca aaa act aat Arg Gly Ala Ser Ile Gln Asp Ile Arg Ala Arg Leu Thr Lys Thr Asn 265 270 275	932
gat aaa agt caa agc aaa gaa gag cct ctt cat gta aca aag agt gat Asp Lys Ser Gln Ser Lys Glu Glu Pro Leu His Val Thr Lys Ser Asp 280 285 290	980
ata cct gat gac ctt gcc caa gca caa gct tac att agg tgg gag aaa Ile Pro Asp Asp Leu Ala Gln Ala Gln Ala Tyr Ile Arg Trp Glu Lys 295 300 305	1028
gca gga aag ccg aac tat cct cca gaa aag caa att gaa gaa ctc gaa Ala Gly Lys Pro Asn Tyr Pro Pro Glu Lys Gln Ile Glu Glu Leu Glu 310 315 320	1076
gaa gca aga aga gaa ttg caa ctt gag ctt gag aaa ggc att acc ctt Glu Ala Arg Arg Glu Leu Gln Leu Glu Leu Glu Lys Gly Ile Thr Leu 325 330 335 340	1124
gat gag ttg cgg aaa acg att aca aaa ggg gag ata aaa act aag gtg Asp Glu Leu Arg Lys Thr Ile Thr Lys Gly Glu Ile Lys Thr Lys Val 345 350 355	1172

gaa aag cac ctg aaa aga agt tct ttt gcc gtt gaa aga atc caa aga Glu Lys His Leu Lys Arg Ser Ser Phe Ala Val Glu Arg Ile Gln Arg 360 365 370	1220
aag aag aga gac ttt ggg cat ctt att aat aag tat act tcc agt cct Lys Lys Arg Asp Phe Gly His Leu Ile Asn Lys Tyr Thr Ser Ser Pro 375 380 385	1268
gca gta caa gta caa aag gtc ttg gaa gaa cca cca gcc tta tct aaa Ala Val Gln Val Gln Lys Val Leu Glu Glu Pro Pro Ala Leu Ser Lys 390 395 400	1316
att aag ctg tat gcc aag gag aag gag gag cag att gat gat ccg atc Ile Lys Leu Tyr Ala Lys Glu Lys Glu Glu Gln Ile Asp Asp Pro Ile 405 410 415 420	1364
cta aat aaa aag atc ttt aag gtc gat gat ggg gag cta ctg gta ctg Leu Asn Lys Lys Ile Phe Lys Val Asp Asp Gly Glu Leu Leu Val Leu 425 430 435	1412
gta gca aag tcc tct ggg aag aca aaa gta cat cta gct aca gat ctg Val Ala Lys Ser Ser Gly Lys Thr Lys Val His Leu Ala Thr Asp Leu 440 445 450	1460
aat cag cca att act ctt cac tgg gca tta tcc aaa agt cct gga gag Asn Gln Pro Ile Thr Leu His Trp Ala Leu Ser Lys Ser Pro Gly Glu 455 460 465	1508
tgg atg gta cca cct tca agc ata ttg cct cct ggg tca att att tta Trp Met Val Pro Pro Ser Ser Ile Leu Pro Pro Gly Ser Ile Ile Leu 470 475 480	1556
gac aag gct gcc gaa aca cct ttt tca gcc agt tct tct gat ggt cta Asp Lys Ala Ala Glu Thr Pro Phe Ser Ala Ser Ser Ser Asp Gly Leu 485 490 495 500	1604
act tct aag gta caa tct ttg gat ata gta att gaa gat ggc aat ttt Thr Ser Lys Val Gln Ser Leu Asp Ile Val Ile Glu Asp Gly Asn Phe 505 510 515	1652
gtg ggg atg cca ttt gtt ctt ttg tct ggt gaa aaa tgg att aag aac Val Gly Met Pro Phe Val Leu Leu Ser Gly Glu Lys Trp Ile Lys Asn 520 525 530	1700
caa ggg tcg gat ttc tat gtt ggc ttc agt gct gca tcc aaa tta gca Gln Gly Ser Asp Phe Tyr Val Gly Phe Ser Ala Ala Ser Lys Leu Ala 535 540 545	1748
ctc aag gct gct ggg gat ggc agt gga act gca aag tct tta ctg gat Leu Lys Ala Ala Gly Asp Gly Ser Gly Thr Ala Lys Ser Leu Leu Asp 550 555 560	1796
aaa ata gca gat atg gaa agt gag gct cag aag tca ttt atg cac cgg Lys Ile Ala Asp Met Glu Ser Glu Ala Gln Lys Ser Phe Met His Arg 565 570 575 580	1844
ttt aat att gca gct gac ttg ata gaa gat gcc act agt gct ggt gaa Phe Asn Ile Ala Ala Asp Leu Ile Glu Asp Ala Thr Ser Ala Gly Glu 585 590 595	1892
ctt ggt ttt gct gga att ctt gta tgg atg agg ttc atg gct aca agg Leu Gly Phe Ala Gly Ile Leu Val Trp Met Arg Phe Met Ala Thr Arg 600 605 610	1940

caa ctg ata tgg aac aaa aac tat aac gta aaa cca cgt gaa ata agc Gln Leu Ile Trp Asn Lys Asn Tyr Asn Val Lys Pro Arg Glu Ile Ser 615 620 625	1988
aag gct cag gac aga ctt aca gac ttg ttg cag aat gct ttc acc agt Lys Ala Gln Asp Arg Leu Thr Asp Leu Leu Gln Asn Ala Phe Thr Ser 630 635 640	2036
cac cct cag tac cgt gaa att ttg cgg atg att atg tca act gtt gga His Pro Gln Tyr Arg Glu Ile Leu Arg Met Ile Met Ser Thr Val Gly 645 650 655 660	2084
cgt gga ggt gaa ggg gat gta gga cag cga att agg gat gaa att ttg Arg Gly Gly Glu Gly Asp Val Gly Gln Arg Ile Arg Asp Glu Ile Leu 665 670 675	2132
gtc atc cag agg aac aat gac tgc aag ggt ggt atg atg caa gaa tgg Val Ile Gln Arg Asn Asn Asp Cys Lys Gly Gly Met Met Gln Glu Trp 680 685 690	2180
cat cag aaa ttg cat aat aat act agt cct gat gat gtt gtt atc tgt His Gln Lys Leu His Asn Asn Thr Ser Pro Asp Asp Val Val Ile Cys 695 700 705	2228
cag gca tta att gac tac atc aag agt gat ttt gat ctt ggt gtt tat Gln Ala Leu Ile Asp Tyr Ile Lys Ser Asp Phe Asp Leu Gly Val Tyr 710 715 720	2276
tgg aaa acc ctg aat gag aac gga ata aca aaa gag cgt ctt ttg agt Trp Lys Thr Leu Asn Glu Asn Gly Ile Thr Lys Glu Arg Leu Leu Ser 725 730 735 740	2324
tat gac cgt gct atc cat tct gaa cca aat ttt aga gga gat caa aag Tyr Asp Arg Ala Ile His Ser Glu Pro Asn Phe Arg Gly Asp Gln Lys 745 750 755	2372
ggt ggt ctt ttg cgt gat tta ggt cac tat atg aga aca ttg aag gca Gly Gly Leu Leu Arg Asp Leu Gly His Tyr Met Arg Thr Leu Lys Ala 760 765 770	2420
gtt cat tca ggt gca gat ctt gag tct gct att gca aac tgc atg ggc Val His Ser Gly Ala Asp Leu Glu Ser Ala Ile Ala Asn Cys Met Gly 775 780 785	2468
tac aaa act gag gga gaa ggc ttt atg gtt gga gtc cag ata aat cct Tyr Lys Thr Glu Gly Glu Gly Phe Met Val Gly Val Gln Ile Asn Pro 790 795 800	2516
gta tca ggc ttg cca tct ggc ttt cag gac ctc ctc cat ttt gtc tta Val Ser Gly Leu Pro Ser Gly Phe Gln Asp Leu Leu His Phe Val Leu 805 810 815 820	2564
gac cat gtg gaa gat aaa aat gtg gaa act ctt ctt gag aga ttg cta Asp His Val Glu Asp Lys Asn Val Glu Thr Leu Leu Glu Arg Leu Leu 825 830 835	2612
gag gct cgt gag gag ctt agg ccc ttg ctt ctc aaa cca aac aac cgt Glu Ala Arg Glu Glu Leu Arg Pro Leu Leu Leu Lys Pro Asn Asn Arg 840 845 850	2660
cta aag gat ctg ctg ttt ttg gac ata gca ctt gat tct aca gtt aga Leu Lys Asp Leu Leu Phe Leu Asp Ile Ala Leu Asp Ser Thr Val Arg 855 860 865	2708

aca gca gta gaa agg gga tat gaa gaa ttg aac aac gct aat cct gag	2756
Thr Ala Val Glu Arg Gly Tyr Glu Glu Leu Asn Asn Ala Asn Pro Glu	
870 875 880	
aaa atc atg tac ttc atc tcc ctc gtt ctt gaa aat ctc gca ctc tct	2804
Lys Ile Met Tyr Phe Ile Ser Leu Val Leu Glu Asn Leu Ala Leu Ser	
885 890 895 900	
gtg gac gat aat gaa gat ctt gtt tat tgc ttg aag gga tgg aat caa	2852
Val Asp Asp Asn Glu Asp Leu Val Tyr Cys Leu Lys Gly Trp Asn Gln	
905 910 915	
gct ctt tca atg tcc aat ggt ggg gac aac cat tgg gct tta ttt gca	2900
Ala Leu Ser Met Ser Asn Gly Gly Asp Asn His Trp Ala Leu Phe Ala	
920 925 930	
aaa gct gtg ctt gac aga acc cgt ctt gca ctt gca agc aag gca gag	2948
Lys Ala Val Leu Asp Arg Thr Arg Leu Ala Leu Ala Ser Lys Ala Glu	
935 940 945	
tgg tac cat cac tta ttg cag cca tct gcc gaa tat cta gga tca ata	2996
Trp Tyr His His Leu Leu Gln Pro Ser Ala Glu Tyr Leu Gly Ser Ile	
950 955 960	
ctt ggg gtg gac caa tgg gct ttg aac ata ttt act gaa gaa att ata	3044
Leu Gly Val Asp Gln Trp Ala Leu Asn Ile Phe Thr Glu Glu Ile Ile	
965 970 975 980	
cgt gct gga tca gca gct tca tta tcc tct ctt ctt aat aga ctc gat	3092
Arg Ala Gly Ser Ala Ala Ser Leu Ser Ser Leu Leu Asn Arg Leu Asp	
985 990 995	
ccc gtg ctt cg _g aaa act gca aat cta gga agt tgg cag att atc	3137
Pro Val Leu Arg Lys Thr Ala Asn Leu Gly Ser Trp Gln Ile Ile	
1000 1005 1010	
agt cca gtt gaa gcc gtt gga tat gtt gtc gtt gtg gat gag ttg	3182
Ser Pro Val Glu Ala Val Gly Tyr Val Val Val Asp Glu Leu	
1015 1020 1025	
ctt tca gtt cag aat gaa atc tac gag aag ccc acg atc tta gta	3227
Leu Ser Val Gln Asn Glu Ile Tyr Glu Lys Pro Thr Ile Leu Val	
1030 1035 1040	
gca aaa tct gtt aaa gga gag gag gaa att cct gat ggt gct gtt	3272
Ala Lys Ser Val Lys Gly Glu Glu Glu Ile Pro Asp Gly Ala Val	
1045 1050 1055	
gcc ctg ata aca cca gac atg cca gat gtt ctt tca cat gtt tct	3317
Ala Leu Ile Thr Pro Asp Met Pro Asp Val Leu Ser His Val Ser	
1060 1065 1070	
gtt cga gct aga aat ggg aag gtt tgc ttt gct aca tgc ttt gat	3362
Val Arg Ala Arg Asn Gly Lys Val Cys Phe Ala Thr Cys Phe Asp	
1075 1080 1085	
ccc aat ata ttg gct gac ctc caa gca aag gaa gga agg att ttg	3407
Pro Asn Ile Leu Ala Asp Leu Gln Ala Lys Glu Gly Arg Ile Leu	
1090 1095 1100	
ctc tta aag cct aca cct tca gac ata atc tat agt gag gtg aat	3452
Leu Leu Lys Pro Thr Pro Ser Asp Ile Ile Tyr Ser Glu Val Asn	
1105 1110 1115	

gag att gag ctc	caa agt tca agt aac	ttg gta gaa gct gaa act	3497
Glu Ile Glu Leu	Gln Ser Ser Ser Asn	Leu Val Glu Ala Glu Thr	
1120	1125	1130	
tca gca aca ctt	aga ttg gtg aaa aag	caa ttt ggt ggt tgt tac	3542
Ser Ala Thr Leu	Arg Leu Val Lys Lys	Gln Phe Gly Gly Cys Tyr	
1135	1140	1145	
gca ata tca gca	gat gaa ttc aca agt	gaa atg gtt gga gct aaa	3587
Ala Ile Ser Ala	Asp Glu Phe Thr Ser	Glu Met Val Gly Ala Lys	
1150	1155	1160	
tca cgt aat att	gca tat ctg aaa gga	aaa gtg cct tcc tcg gtg	3632
Ser Arg Asn Ile	Ala Tyr Leu Lys Gly	Lys Val Pro Ser Ser Val	
1165	1170	1175	
gga att cct acg	tca gta gct ctt cca	ttt gga gtc ttt gag aaa	3677
Gly Ile Pro Thr	Ser Val Ala Leu Pro	Phe Gly Val Phe Glu Lys	
1180	1185	1190	
gta ctt tca gac	gac ata aat cag gga	gtg gca aaa gag ttg caa	3722
Val Leu Ser Asp	Asp Ile Asn Gln Gly	Val Ala Lys Glu Leu Gln	
1195	1200	1205	
att ctg atg aaa	aaa cta tct gaa gga	gac ttc agc gct ctt ggt	3767
Ile Leu Met Lys	Lys Leu Ser Glu Gly	Asp Phe Ser Ala Leu Gly	
1210	1215	1220	
gaa att cgc aca	acg gtt tta gat ctt	tca gca cca gct caa ttg	3812
Glu Ile Arg Thr	Thr Val Leu Asp Leu	Ser Ala Pro Ala Gln Leu	
1225	1230	1235	
gtc aaa gag ctg	aag gag aag atg cag	ggt tct ggc atg cct tgg	3857
Val Lys Glu Leu	Lys Glu Lys Met Gln	Gly Ser Gly Met Pro Trp	
1240	1245	1250	
cct ggt gat gaa	ggt cca aag cgg tgg	gaa caa gca tgg atg gcc	3902
Pro Gly Asp Glu	Gly Pro Lys Arg Trp	Glu Gln Ala Trp Met Ala	
1255	1260	1265	
ata aaa aag gtg	tgg gct tca aaa tgg	aat gag aga gca tac ttc	3947
Ile Lys Lys Val	Trp Ala Ser Lys Trp	Asn Glu Arg Ala Tyr Phe	
1270	1275	1280	
agc aca agg aag	gtg aaa ctg gat cat	gac tat ctg tgc atg gct	3992
Ser Thr Arg Lys	Val Lys Leu Asp His	Asp Tyr Leu Cys Met Ala	
1285	1290	1295	
gtc ctt gtt caa	gaa ata ata aat gct	gat tat gca ttt gtc att	4037
Val Leu Val Gln	Glu Ile Ile Asn Ala	Asp Tyr Ala Phe Val Ile	
1300	1305	1310	
cac aca acc aac	cca tct tcc gga gac	gac tca gaa ata tat gcc	4082
His Thr Thr Asn	Pro Ser Ser Gly Asp	Asp Ser Glu Ile Tyr Ala	
1315	1320	1325	
gag gtg gtc agg	ggc ctt ggg gaa aca	ctt gtt gga gct tat cca	4127
Glu Val Val Arg	Gly Leu Gly Glu Thr	Leu Val Gly Ala Tyr Pro	
1330	1335	1340	
gga cgt gct ttg	agt ttt atc tgc aag	aaa aag gat ctc aac tct	4172
Gly Arg Ala Leu	Ser Phe Ile Cys Lys	Lys Lys Asp Leu Asn Ser	
1345	1350	1355	

cct caa gtg tta ggt tac cca agc aaa ccg atc ggc ctt ttc ata Pro Gln Val Leu Gly Tyr Pro Ser Lys Pro Ile Gly Leu Phe Ile 1360 1365 1370	4217
aaa aga tct atc atc ttc cga tct gat tcc aat ggg gaa gat ttg Lys Arg Ser Ile Ile Phe Arg Ser Asp Ser Asn Gly Glu Asp Leu 1375 1380 1385	4262
gaa ggt tat gcc ggt gct ggc ctc tac gac agt gta cca atg gat Glu Gly Tyr Ala Gly Ala Gly Leu Tyr Asp Ser Val Pro Met Asp 1390 1395 1400	4307
gag gag gaa aaa gtt gta att gat tac tct tcc gac cca ttg ata Glu Glu Glu Lys Val Val Ile Asp Tyr Ser Ser Asp Pro Leu Ile 1405 1410 1415	4352
act gat ggt aac ttc cgc cag aca atc ctg tcc aac att gct cgt Thr Asp Gly Asn Phe Arg Gln Thr Ile Leu Ser Asn Ile Ala Arg 1420 1425 1430	4397
gct gga cat gct atc gag gag cta tat ggc tct cct caa gac att Ala Gly His Ala Ile Glu Glu Leu Tyr Gly Ser Pro Gln Asp Ile 1435 1440 1445	4442
gag ggt gta gtg agg gat gga aag att tat gtc gtt cag aca aga Glu Gly Val Val Arg Asp Gly Lys Ile Tyr Val Val Gln Thr Arg 1450 1455 1460	4487
cca cag atg tga ttatattctc gttgtatgtt gttcagagaa gaccacagat Pro Gln Met	4539
gtgatcatat tctcattgta tcagatctgt gaccacttac ctgatacctc ccatgaagtt acctgtatga ttatacgtga tccaaagcca tcacatcatg ttcaccttca gctattggag gagaagttag aagtaggaat tgcaatatga ggaataataa gaaaaacttt gtaaaagctaa aattagctgg gtatgatata gggagaaatg tgtaaacatt gtactatata tagtatatac acacgcatta tgtattgcat tatgcactga ataatatcgc agcatcaaag aagaaatcct ttgggtggtt tc	4599 4659 4719 4779 4839 4851

<210> 11

<211> 1464

<212> PRT

<213> Solanum tuberosum

<400> 11

Met Ser Asn Ser Leu Gly Asn Asn Leu Leu Tyr Gln Gly Phe Leu Thr 1 5 10 15
--

Ser Thr Val Leu Glu His Lys Ser Arg Ile Ser Pro Pro Cys Val Gly 20 25 30

Gly Asn Ser Leu Phe Gln Gln Gln Val Ile Ser Lys Ser Pro Leu Ser
35 40 45

Thr Glu Phe Arg Gly Asn Arg Leu Lys Val Gln Lys Lys Lys Ile Pro
50 55 60

Met Glu Lys Lys Arg Ala Phe Ser Ser Pro His Ala Val Leu Thr
65 70 75 80

Thr Asp Thr Ser Ser Glu Leu Ala Glu Lys Phe Ser Leu Gly Gly Asn
85 90 95

Ile Glu Leu Gln Val Asp Val Arg Pro Pro Thr Ser Gly Asp Val Ser
100 105 110

Phe Val Asp Phe Gln Val Thr Asn Gly Ser Asp Lys Leu Phe Leu His
115 120 125

Trp Gly Ala Val Lys Phe Gly Lys Glu Thr Trp Ser Leu Pro Asn Asp
130 135 140

Arg Pro Asp Gly Thr Lys Val Tyr Lys Asn Lys Ala Leu Arg Thr Pro
145 150 155 160

Phe Val Lys Ser Gly Ser Asn Ser Ile Leu Arg Leu Glu Ile Arg Asp
165 170 175

Thr Ala Ile Glu Ala Ile Glu Phe Leu Ile Tyr Asp Glu Ala His Asp
180 185 190

Lys Trp Ile Lys Asn Asn Gly Gly Asn Phe Arg Val Lys Leu Ser Arg
195 200 205

Lys Glu Ile Arg Gly Pro Asp Val Ser Val Pro Glu Glu Leu Val Gln
210 215 220

Ile Gln Ser Tyr Leu Arg Trp Glu Arg Lys Gly Lys Gln Asn Tyr Pro
225 230 235 240

Pro Glu Lys Glu Lys Glu Glu Tyr Glu Ala Ala Arg Thr Val Leu Gln
245 250 255

Glu Glu Ile Ala Arg Gly Ala Ser Ile Gln Asp Ile Arg Ala Arg Leu
260 265 270

Thr Lys Thr Asn Asp Lys Ser Gln Ser Lys Glu Glu Pro Leu His Val
275 280 285

Thr Lys Ser Asp Ile Pro Asp Asp Leu Ala Gln Ala Gln Ala Tyr Ile
290 295 300

Arg Trp Glu Lys Ala Gly Lys Pro Asn Tyr Pro Pro Glu Lys Gln Ile
305 310 315 320

Glu Glu Leu Glu Glu Ala Arg Arg Glu Leu Gln Leu Glu Leu Glu Lys
325 330 335

Gly Ile Thr Leu Asp Glu Leu Arg Lys Thr Ile Thr Lys Gly Glu Ile
340 345 350

Lys Thr Lys Val Glu Lys His Leu Lys Arg Ser Ser Phe Ala Val Glu
355 360 365

Arg Ile Gln Arg Lys Lys Arg Asp Phe Gly His Leu Ile Asn Lys Tyr
370 375 380

Thr Ser Ser Pro Ala Val Gln Val Gln Lys Val Leu Glu Glu Pro Pro
385 390 395 400

Ala Leu Ser Lys Ile Lys Leu Tyr Ala Lys Glu Lys Glu Glu Gln Ile
405 410 415

Asp Asp Pro Ile Leu Asn Lys Lys Ile Phe Lys Val Asp Asp Gly Glu
420 425 430

Leu Leu Val Leu Val Ala Lys Ser Ser Gly Lys Thr Lys Val His Leu
435 440 445

Ala Thr Asp Leu Asn Gln Pro Ile Thr Leu His Trp Ala Leu Ser Lys
450 455 460

Ser Pro Gly Glu Trp Met Val Pro Pro Ser Ser Ile Leu Pro Pro Gly
465 470 475 480

Ser Ile Ile Leu Asp Lys Ala Ala Glu Thr Pro Phe Ser Ala Ser Ser
485 490 495

Ser Asp Gly Leu Thr Ser Lys Val Gln Ser Leu Asp Ile Val Ile Glu
500 505 510

Asp Gly Asn Phe Val Gly Met Pro Phe Val Leu Leu Ser Gly Glu Lys
515 520 525

Trp Ile Lys Asn Gln Gly Ser Asp Phe Tyr Val Gly Phe Ser Ala Ala
530 535 540

Ser Lys Leu Ala Leu Lys Ala Ala Gly Asp Gly Ser Gly Thr Ala Lys
545 550 555 560

Ser Leu Leu Asp Lys Ile Ala Asp Met Glu Ser Glu Ala Gln Lys Ser
565 570 575

Phe Met His Arg Phe Asn Ile Ala Ala Asp Leu Ile Glu Asp Ala Thr
580 585 590

Ser Ala Gly Glu Leu Gly Phe Ala Gly Ile Leu Val Trp Met Arg Phe
595 600 605

Met Ala Thr Arg Gln Leu Ile Trp Asn Lys Asn Tyr Asn Val Lys Pro
610 615 620

Arg Glu Ile Ser Lys Ala Gln Asp Arg Leu Thr Asp Leu Leu Gln Asn
625 630 635 640

Ala Phe Thr Ser His Pro Gln Tyr Arg Glu Ile Leu Arg Met Ile Met
645 650 655

Ser Thr Val Gly Arg Gly Glu Gly Asp Val Gly Gln Arg Ile Arg
660 665 670

Asp Glu Ile Leu Val Ile Gln Arg Asn Asn Asp Cys Lys Gly Gly Met
675 680 685

Met Gln Glu Trp His Gln Lys Leu His Asn Asn Thr Ser Pro Asp Asp
690 695 700

Val Val Ile Cys Gln Ala Leu Ile Asp Tyr Ile Lys Ser Asp Phe Asp
705 710 715 720

Leu Gly Val Tyr Trp Lys Thr Leu Asn Glu Asn Gly Ile Thr Lys Glu
725 730 735

Arg Leu Leu Ser Tyr Asp Arg Ala Ile His Ser Glu Pro Asn Phe Arg
740 745 750

Gly Asp Gln Lys Gly Gly Leu Leu Arg Asp Leu Gly His Tyr Met Arg
755 760 765

Thr Leu Lys Ala Val His Ser Gly Ala Asp Leu Glu Ser Ala Ile Ala
770 775 780

Asn Cys Met Gly Tyr Lys Thr Glu Gly Glu Gly Phe Met Val Gly Val
785 790 795 800

Gln Ile Asn Pro Val Ser Gly Leu Pro Ser Gly Phe Gln Asp Leu Leu
805 810 815

His Phe Val Leu Asp His Val Glu Asp Lys Asn Val Glu Thr Leu Leu
820 825 830

Glu Arg Leu Leu Glu Ala Arg Glu Glu Leu Arg Pro Leu Leu Leu Lys
835 840 845

Pro Asn Asn Arg Leu Lys Asp Leu Leu Phe Leu Asp Ile Ala Leu Asp
850 855 860

Ser Thr Val Arg Thr Ala Val Glu Arg Gly Tyr Glu Glu Leu Asn Asn
865 870 875 880

Ala Asn Pro Glu Lys Ile Met Tyr Phe Ile Ser Leu Val Leu Glu Asn
885 890 895

Leu Ala Leu Ser Val Asp Asp Asn Glu Asp Leu Val Tyr Cys Leu Lys
900 905 910

Gly Trp Asn Gln Ala Leu Ser Met Ser Asn Gly Gly Asp Asn His Trp
915 920 925

Ala Leu Phe Ala Lys Ala Val Leu Asp Arg Thr Arg Leu Ala Leu Ala
930 935 940

Ser Lys Ala Glu Trp Tyr His His Leu Leu Gln Pro Ser Ala Glu Tyr
945 950 955 960

Leu Gly Ser Ile Leu Gly Val Asp Gln Trp Ala Leu Asn Ile Phe Thr
965 970 975

Glu Glu Ile Ile Arg Ala Gly Ser Ala Ala Ser Leu Ser Ser Leu Leu
980 985 990

Asn Arg Leu Asp Pro Val Leu Arg Lys Thr Ala Asn Leu Gly Ser Trp
995 1000 1005

Gln Ile Ile Ser Pro Val Glu Ala Val Gly Tyr Val Val Val Val
1010 1015 1020

Asp Glu Leu Leu Ser Val Gln Asn Glu Ile Tyr Glu Lys Pro Thr
1025 1030 1035

Ile Leu Val Ala Lys Ser Val Lys Gly Glu Glu Glu Ile Pro Asp
1040 1045 1050

Gly Ala Val Ala Leu Ile Thr Pro Asp Met Pro Asp Val Leu Ser
1055 1060 1065

His Val Ser Val Arg Ala Arg Asn Gly Lys Val Cys Phe Ala Thr
1070 1075 1080

Cys Phe Asp Pro Asn Ile Leu Ala Asp Leu Gln Ala Lys Glu Gly
1085 1090 1095

Arg Ile Leu Leu Leu Lys Pro Thr Pro Ser Asp Ile Ile Tyr Ser
1100 1105 1110

Glu Val Asn Glu Ile Glu Leu Gln Ser Ser Ser Asn Leu Val Glu
1115 1120 1125

Ala Glu Thr Ser Ala Thr Leu Arg Leu Val Lys Lys Gln Phe Gly
1130 1135 1140

Gly Cys Tyr Ala Ile Ser Ala Asp Glu Phe Thr Ser Glu Met Val
1145 1150 1155

Gly Ala Lys Ser Arg Asn Ile Ala Tyr Leu Lys Gly Lys Val Pro
1160 1165 1170

Ser Ser Val Gly Ile Pro Thr Ser Val Ala Leu Pro Phe Gly Val
1175 1180 1185

Phe Glu Lys Val Leu Ser Asp Asp Ile Asn Gln Gly Val Ala Lys
1190 1195 1200

Glu Leu Gln Ile Leu Met Lys Lys Leu Ser Glu Gly Asp Phe Ser
1205 1210 1215

Ala Leu Gly Glu Ile Arg Thr Thr Val Leu Asp Leu Ser Ala Pro
1220 1225 1230

Ala Gln Leu Val Lys Glu Leu Lys Glu Lys Met Gln Gly Ser Gly
1235 1240 1245

Met Pro Trp Pro Gly Asp Glu Gly Pro Lys Arg Trp Glu Gln Ala
1250 1255 1260

Trp Met Ala Ile Lys Lys Val Trp Ala Ser Lys Trp Asn Glu Arg
1265 1270 1275

Ala Tyr Phe Ser Thr Arg Lys Val Lys Leu Asp His Asp Tyr Leu
1280 1285 1290

Cys Met Ala Val Leu Val Gln Glu Ile Ile Asn Ala Asp Tyr Ala
1295 1300 1305

Phe Val Ile His Thr Thr Asn Pro Ser Ser Gly Asp Asp Ser Glu
1310 1315 1320

Ile Tyr Ala Glu Val Val Arg Gly Leu Gly Glu Thr Leu Val Gly
1325 1330 1335

Ala Tyr Pro Gly Arg Ala Leu Ser Phe Ile Cys Lys Lys Lys Asp
1340 1345 1350

Leu Asn Ser Pro Gln Val Leu Gly Tyr Pro Ser Lys Pro Ile Gly
1355 1360 1365

Leu Phe Ile Lys Arg Ser Ile Ile Phe Arg Ser Asp Ser Asn Gly
1370 1375 1380

Glu Asp Leu Glu Gly Tyr Ala Gly Ala Gly Leu Tyr Asp Ser Val
1385 1390 1395

Pro Met Asp Glu Glu Glu Lys Val Val Ile Asp Tyr Ser Ser Asp
1400 1405 1410

Pro Leu Ile Thr Asp Gly Asn Phe Arg Gln Thr Ile Leu Ser Asn
1415 1420 1425

Ile Ala Arg Ala Gly His Ala Ile Glu Glu Leu Tyr Gly Ser Pro
1430 1435 1440

Gln Asp Ile Glu Gly Val Val Arg Asp Gly Lys Ile Tyr Val Val
1445 1450 1455

Gln Thr Arg Pro Gln Met
1460

<210> 12

<211> 4576

<212> DNA

<213> Oryza sativa

<220>

<221> CDS

<222> (20)..(4393)

<223>

<300>

<308> NCBI / AR400814

<309> 2003-12-18

190	195	200	
tct act gct act tct 205	act gtg gtt cca gag 210	gat ctt gtg cag 215	ata 676
Ser Thr Ala Thr Ser	Thr Val Val Pro Glu	Asp Leu Val Gln Ile	
220	225	230	235
caa tca tat ctt cg 220	tgg gaa aga aag gga 225	aag cag tca tat aca 230	cct 724
Gln Ser Tyr Leu Arg	Trp Glu Arg Lys Gly	Lys Gln Ser Tyr Thr	Pro
240	245	250	
gag caa gag aag gag 240	gag tat gaa gca gca 245	cga act gag ttg ata 250	gag 772
Glu Gln Glu Lys Glu	Tyr Glu Ala Ala Arg	Thr Glu Leu Ile Glu	
255	260	265	
gaa tta aac aag ggt 255	gtt tct ttg gag aag 260	cta cga gcg aaa ctg 265	aca 820
Glu Leu Asn Lys Gly	Val Ser Leu Glu Lys	Leu Arg Ala Lys Leu	Thr
270	275	280	
aag aca cct gag gca 270	act gat agt aat gct 275	cct gca tct gaa agc 280	act 868
Lys Thr Pro Glu Ala	Thr Asp Ser Asn Ala	Pro Ala Ser Glu Ser	Thr
285	290	295	
gtg act act aaa gtc 285	cca gag gaa ctt gta 290	caa gtc cag gct tac 295	ata 916
Val Thr Thr Lys Val	Pro Glu Glu Leu Val	Gln Val Gln Ala Tyr	Ile
300	305	310	315
agg tgg gag aaa gca 300	gac aag cca aat tat 305	gcc cca gag aag caa 310	ttg 964
Arg Trp Glu Lys Ala	Gly Lys Pro Asn Tyr	Ala Pro Glu Lys Gln	Leu
320	325	330	
gtc gag ttt gag gaa 320	gca agg aag gaa ctg 325	cag tct gag ttg gat 330	aag 1012
Val Glu Phe Glu Glu	Ala Arg Lys Glu Leu	Gln Ser Glu Leu Asp	Lys
335	340	345	
ggg acc tca gtt gag 335	cag ttg agg aac aaa 340	att ttg aaa ggg aac 345	att 1060
Gly Thr Ser Val Glu	Gln Leu Arg Asn Lys	Ile Leu Lys Gly Asn	Ile
350	355	360	
gag aca aaa gtt tcc 350	aag cag ctg aag gac 355	aaa aaa tac ttt tct gtg 360	1108
Glu Thr Lys Val Ser	Lys Gln Leu Lys Asp	Lys Lys Tyr Phe Ser	Val
365	370	375	
gaa aga att cag cgg 365	aaa cga gat att gtg 370	caa cta ctt aaa aaa 375	1156
Glu Arg Ile Gln Arg	Lys Lys Arg Asp Ile	Val Gln Leu Leu Lys	Lys
380	385	390	395
cac aag cct act gtt 380	atg gaa gcg caa gta 385	gag act cct aaa caa 390	ccc 1204
His Lys Pro Thr Val	Met Glu Ala Gln Val	Glu Thr Pro Lys Gln	Pro
400	405	410	
act gtt ctg gat ctc 400	ttc aca aag tca tta 405	cag gag cag gat aac 410	tgt 1252
Thr Val Leu Asp Leu	Phe Thr Lys Ser Leu	Gln Glu Gln Asp Asn	Cys
415	420	425	
gag gtt cta agc aga 415	aag ctt ttc aag ttc 420	ggt gac aag gag ata 425	ctg 1300
Glu Val Leu Ser Arg	Lys Leu Phe Lys	Phe Gly Asp Lys Glu	Ile Leu
430	435	440	
gga att acc acc gtt 430	gct cta gga aaa acc 435	aaa gtt cac ttg gca 440	aca 1348
Gly Ile Thr Thr Val	Ala Leu Gly Lys Thr	Lys Val His Leu Ala	Thr
450	455	460	
aac tat atg gag cca 450	ctt ata ctt cac tgg 455	gct tca aaa gag aat 460	1396
Asn Tyr Met Glu Pro	Leu Ile Leu His Trp	Ala Leu Ser Lys Glu	Asn

445	450	455	
gga gag tgg cag gca cct ccc tca agc ata ttg cca tct ggt tca tca Gly Glu Trp Gln Ala Pro Pro Ser Ser Ile Leu Pro Ser Gly Ser Ser 460 465 470 475			1444
ttg cta gac aag gca tgt gaa act tca ttc agt gaa tat gaa ttg aat Leu Leu Asp Lys Ala Cys Glu Thr Ser Phe Ser Glu Tyr Glu Leu Asn 480 485 490			1492
ggc ctg cat tgt cag gtt gtt gag atc gag ctt gac gat ggt gga tac Gly Leu His Cys Gln Val Val Glu Ile Glu Leu Asp Asp Gly Gly Tyr 495 500 505			1540
aag cgg atg ccc ttt gtt ctc cgg tct ggt gaa aca tgg atg aaa aat Lys Arg Met Pro Phe Val Leu Arg Ser Gly Glu Thr Trp Met Lys Asn 510 515 520			1588
aat ggc tct gac ttt tac ttg gat ttc agc acc aaa gtt gca aaa aat Asn Gly Ser Asp Phe Tyr Leu Asp Phe Ser Thr Lys Val Ala Lys Asn 525 530 535			1636
aca aag gat act ggt gat gct ggt aaa ggc act gct gag gcc ttg ctt Thr Lys Asp Thr Gly Asp Ala Gly Lys Gly Thr Ala Glu Ala Leu Leu 540 545 550 555			1684
gaa aga ata gca gat cta gag gaa gat gcc caa cga tct ctt atg cac Glu Arg Ile Ala Asp Leu Glu Glu Asp Ala Gln Arg Ser Leu Met His 560 565 570			1732
aga ttc aat att gca gca gat cta gtt gac caa gcg aga gat aat gga Arg Phe Asn Ile Ala Ala Asp Leu Val Asp Gln Ala Arg Asp Asn Gly 575 580 585			1780
tta ttg ggt att att gga att ttt gtt tgg att ggg ttc atg gct aca Leu Leu Gly Ile Ile Gly Ile Phe Val Trp Ile Gly Phe Met Ala Thr 590 595 600			1828
agg caa cta ata tgg aac aag aac tac aat gtc aag cca cgt gag ata Arg Gln Leu Ile Trp Asn Lys Asn Tyr Asn Val Lys Pro Arg Glu Ile 605 610 615			1876
agc aaa gcc caa gat agg ttt aca gat gat ctt gag aat atg tac aga Ser Lys Ala Gln Asp Arg Phe Thr Asp Asp Leu Glu Asn Met Tyr Arg 620 625 630 635			1924
act tac cca caa tat cag gag atc tta aga atg ata atg tct gct gtt Thr Tyr Pro Gln Tyr Gln Glu Ile Leu Arg Met Ile Met Ser Ala Val 640 645 650			1972
ggc cgg gga ggt gaa ggt gat gtt ggt caa cgc att cgt gat gag ata Gly Arg Gly Glu Gly Asp Val Gln Arg Ile Arg Asp Glu Ile 655 660 665			2020
tta gta atc cag aga aat aat gac tgc aaa ggt gga atg atg gag gag Leu Val Ile Gln Arg Asn Asn Asp Cys Lys Gly Gly Met Met Glu Glu 670 675 680			2068
tgg cac cag aaa ctg cac aac aat aca agc cca gat gat gta gtc atc Trp His Gln Lys Leu His Asn Asn Thr Ser Pro Asp Asp Val Val Ile 685 690 695			2116
tgc cag gcc cta ctt gat tat atc aag agt gat ttt gat act ggt gtt Cys Gln Ala Leu Leu Asp Tyr Ile Lys Ser Asp Phe Asp Thr Gly Val			2164

700	705	710	715	
tac tgg gac acc ttg	aaa aaa ggt ggt	ata aca aaa gag cgt	cta ttg	2212
Tyr Trp Asp Thr Leu	Lys Lys Gly Gly	Ile Thr Lys Glu Arg	Leu Leu	
720	725	730		
agc tat gat cga ccg	att cat tca gag cca aat ttc	agg agt gaa cag		2260
Ser Tyr Asp Arg Pro	Ile His Ser Glu Pro Asn Phe	Arg Ser Glu Gln		
735	740	745		
aaa gat agc tta ctc	cgt gac ttg ggc aat tat atg	aga agc ctc aag		2308
Lys Asp Ser Leu Leu	Arg Asp Leu Gly Asn Tyr	Met Arg Ser Leu Lys		
750	755	760		
gca gtg cat tct ggt	gct gat ctt gaa tct gct	ata gca act tgc atg		2356
Ala Val His Ser Gly	Ala Asp Leu Glu Ser Ala	Ile Ala Thr Cys Met		
765	770	775		
gga tac aaa tca gag	ggt gaa ggt ttc atg gtt ggt	cag att aat		2404
Gly Tyr Lys Ser Glu	Gly Glu Gly Phe Met Val	Gly Val Gln Ile Asn		
780	785	790	795	
cca gtg aag ggt ttg	cca tct gga ttt cct	aaa ttg ctt gaa ttt ata		2452
Pro Val Lys Gly	Leu Pro Ser Gly Phe Pro	Lys Leu Glu Phe Ile		
800	805	810		
ctt gac cat gtt gag	gat aaa tca gca aga cca	ctt ctt gga ggg tta		2500
Leu Asp His Val Glu	Asp Lys Ser Ala Arg Pro	Leu Leu Gly Gly Leu		
815	820	825		
ttg gag gct cga gct	gaa cta cac cct ttg ctc	ctt ggc tct cct gaa		2548
Leu Glu Ala Arg Ala	Glu Leu His Pro Leu Leu	Gly Ser Pro Glu		
830	835	840		
cgc atg aag gat ctt atc	ttt tta gac att gct	ctt gat tct act ttc		2596
Arg Met Lys Asp Leu	Ile Phe Leu Asp Ile Ala	Leu Asp Ser Thr Phe		
845	850	855		
agg aca gca gtc gaa	aga tca tat gag gag	ctc aat aat gta gaa cca		2644
Arg Thr Ala Val Glu	Arg Ser Tyr Glu Glu	Leu Asn Asn Val Glu Pro		
860	865	870	875	
gag aaa att atg tac	ttc atc agt ctt gtc	ctt gaa aat ctt gct tta		2692
Glu Lys Ile Met Tyr	Phe Ile Ser Leu Val	Leu Glu Asn Leu Ala Leu		
880	885	890		
tcc acc gac aat gaa	gat atc cta tat tgc tta	aag gga tgg aat		2740
Ser Thr Asp Asp Asn	Glu Asp Ile Leu Tyr	Cys Leu Lys Gly Trp Asn		
895	900	905		
caa gcc gtg gaa atg	gct aaa cag aaa aac aac	caa tgg gct ctc tat		2788
Gln Ala Val Glu Met	Ala Lys Gln Lys Asn Asn	Gln Trp Ala Leu Tyr		
910	915	920		
gct aaa gca ttt ctg	gac aga acc aga ctt gcc	ctt gca agc aag gga		2836
Ala Lys Ala Phe Leu	Asp Arg Thr Arg Leu Ala	Leu Ala Ser Lys Gly		
925	930	935		
gaa caa tac tat aat	ttg atg cag ccc tca gct	gaa tat ctt ggc tcg		2884
Glu Gln Tyr Tyr Asn	Leu Met Gln Pro Ser Ala	Glu Tyr Leu Gly Ser		
940	945	950	955	
tta ctt aac att gac	caa tgg gca gtt aat atc	ttt aca gaa gaa att		2932
Leu Leu Asn Ile Asp	Gln Trp Ala Val Asn	Ile Phe Thr Glu Glu Ile		

960	965	970	
att cgt ggt gga tca gct gct acc ctg tct gct ctt ctg aat cgg att Ile Arg Gly Gly Ser Ala Ala Thr Leu Ser Ala Leu Leu Asn Arg Ile 975	980	985	2980
gat cct gtt ctt agg aat gtt gca cag ctt gga agt tgg cag gtt ata Asp Pro Val Leu Arg Asn Val Ala Gln Leu Gly Ser Trp Gln Val Ile 990	995	1000	3028
agc cca gtt gaa gta tca ggt tac att gta gtg gtt gat gaa ttg Ser Pro Val Glu Val Ser Gly Tyr Ile Val Val Val Asp Glu Leu 1005	1010	1015	3073
ctt gct gtt caa aac aaa tcc tat gat aaa cca act atc ctt gtg Leu Ala Val Gln Asn Lys Ser Tyr Asp Lys Pro Thr Ile Leu Val 1020	1025	1030	3118
gca aag agt gtc aag gga gag gaa gaa ata cca gat gga gtt gtt Ala Lys Ser Val Lys Gly Glu Glu Glu Ile Pro Asp Gly Val Val 1035	1040	1045	3163
ggt gtt att aca cct gat atg cca gat gtt ctc tcc cat gta tca Gly Val Ile Thr Pro Asp Met Pro Asp Val Leu Ser His Val Ser 1050	1055	1060	3208
gtc cga gca agg aat tgc aag gtt tta ttt gca aca tgc ttt gat Val Arg Ala Arg Asn Cys Lys Val Leu Phe Ala Thr Cys Phe Asp 1065	1070	1075	3253
cct aac acc ttg tct gaa ctc caa gga cat gat ggg aaa gtg ttt Pro Asn Thr Leu Ser Glu Leu Gln Gly His Asp Gly Lys Val Phe 1080	1085	1090	3298
tcc ttc aaa cct act tct gca gat atc acc tat agg gag att cca Ser Phe Lys Pro Thr Ser Ala Asp Ile Thr Tyr Arg Glu Ile Pro 1095	1100	1105	3343
gag agt gaa ctg caa tca ggt tct cta aat gca gaa gct ggc cag Glu Ser Glu Leu Gln Ser Gly Ser Leu Asn Ala Glu Ala Gly Gln 1110	1115	1120	3388
gca gtg cca tct gtg tca tta gtc aag aag aag ttt ctt gga aaa Ala Val Pro Ser Val Ser Leu Val Lys Lys Lys Phe Leu Gly Lys 1125	1130	1135	3433
tat gca ata tca gca gaa gaa ttc tct gag gaa atg gtt ggg gcc Tyr Ala Ile Ser Ala Glu Glu Phe Ser Glu Glu Met Val Gly Ala 1140	1145	1150	3478
aag tct cgc aac gta gca tac ctc aaa gga aaa gta ccc tca tgg Lys Ser Arg Asn Val Ala Tyr Leu Lys Gly Lys Val Pro Ser Trp 1155	1160	1165	3523
gtt ggt gtc cct aca tca gtt gcg att cca ttt ggg acc ttt gag Val Gly Val Pro Thr Ser Val Ala Ile Pro Phe Gly Thr Phe Glu 1170	1175	1180	3568
aag gtt ttg tct gat gaa atc aat aag gaa gtc gcg caa acc ata Lys Val Leu Ser Asp Glu Ile Asn Lys Glu Val Ala Gln Thr Ile 1185	1190	1195	3613
caa atg ctg aag gga aaa ctt gct caa gat gat ttt agt gct cta Gln Met Leu Lys Gly Lys Leu Ala Gln Asp Asp Phe Ser Ala Leu			3658

1200	1205	1210	
ggc gaa ata cgg aaa act gtt ctc aat tta act gct cct act caa Gly Glu Ile Arg Lys Thr Val Leu Asn Leu Thr Ala Pro Thr Gln 1215 1220 1225			3703
ctg atc aag gaa ctg aag gag aag atg cta ggc tct gga atg ccc Leu Ile Lys Glu Leu Lys Glu Lys Met Leu Gly Ser Gly Met Pro 1230 1235 1240			3748
tgg cct gga gat gaa ggt gac caa cgt tgg gag caa gca tgg atg Trp Pro Gly Asp Glu Gly Asp Gln Arg Trp Glu Gln Ala Trp Met 1245 1250 1255			3793
gca att aaa aag gtt tgg gcg tca aaa tgg aat gaa aga gca tat Ala Ile Lys Lys Val Trp Ala Ser Lys Trp Asn Glu Arg Ala Tyr 1260 1265 1270			3838
ttt agc act cgt aag gtg aag ctt gat cat gac tac ctt tcc atg Phe Ser Thr Arg Lys Val Lys Leu Asp His Asp Tyr Leu Ser Met 1275 1280 1285			3883
gct gta ctt gta caa gaa att gtc aat gca gac tat gcc ttt gtc Ala Val Leu Val Gln Glu Ile Val Asn Ala Asp Tyr Ala Phe Val 1290 1295 1300			3928
att cat act act aac cca tca tcg gga gat tcg tct gag ata tat Ile His Thr Thr Asn Pro Ser Ser Gly Asp Ser Ser Glu Ile Tyr 1305 1310 1315			3973
gct gaa gtg gtg aaa ggg ctt gga gaa aca ctt gta gga gcc tat Ala Glu Val Val Lys Gly Leu Gly Glu Thr Leu Val Val Gly Ala Tyr 1320 1325 1330			4018
cct ggt cgc gcc atg agc ttt gta tgt aag aaa aac gac ctt gac Pro Gly Arg Ala Met Ser Phe Val Cys Lys Lys Asn Asp Leu Asp 1335 1340 1345			4063
tct ccc aag gta ctg ggt ttc cca agc aag cca att ggt gtc ttc Ser Pro Lys Val Leu Gly Phe Pro Ser Lys Pro Ile Gly Val Phe 1350 1355 1360			4108
ata aag aga tca atc atc ttt cgt tcg gat tcc aac ggt gag gat Ile Lys Arg Ser Ile Ile Phe Arg Ser Asp Ser Asn Asn Gly Glu Asp 1365 1370 1375			4153
tta gaa ggg tat gct gga gca aga ctg tat gat agt gtc cct atg Leu Glu Gly Tyr Ala Gly Ala Arg Leu Tyr Asp Ser Val Pro Met 1380 1385 1390			4198
gat gag gaa gat gaa gtc ata gtc gac tac aac aac gga ccc ctc Asp Glu Glu Asp Glu Val Ile Val Asp Tyr Asn Asn Asn Gly Pro Leu 1395 1400 1405			4243
att aca gat cag gga ttc caa aaa tcc aac ctc ccg agc att gca Ile Thr Asp Gln Gly Phe Gln Lys Ser Asn Leu Pro Ser Ile Ala 1410 1415 1420			4288
ccg gct ggt cat gcc att gag gag ctt tat ggg tcc cca cag gat Pro Ala Gly His Ala Ile Glu Glu Leu Tyr Gly Ser Pro Gln Asp 1425 1430 1435			4333
gtt gag ggt gca gtg aag gaa ggg aag cta tac gta gta cag aca Val Glu Gly Ala Val Lys Glu Gly Lys Leu Tyr Val Val Gln Thr			4378

1440	1445	1450	
aga cca cag atg taa tctatatgtat	tat	ccaagtcaat caggcaatgt	4433
Arg Pro Gln Met			
1455			
tgttagatcaa gatatacggg ccgtgggaca tgtataacac gttacgcccct ttttttatt			4493
atttgcttc atactcacaa tacactaatt tataggcctt attttatcgc caaaaaaaaaa			4553
aaaaaaaaaga aaaaaaaaaaaa aaa			4576
<210> 13			
<211> 1457			
<212> PRT			
<213> Oryza sativa			
<400> 13			
Met Ser Gly Phe Ser Ala Ala Ala Ala Ala Ala Glu Arg Cys Ala Leu			
1 5 10 15			
Gly Leu Gly Val His Ala Arg Pro Ala Ser Pro Ser Pro Ala Leu Leu			
20 25 30			
Pro Pro Ala Ala Leu Arg Arg Gly Arg Arg Leu Pro Ala Ala Thr Thr			
35 40 45			
Thr Leu Ala Val Ser Arg Arg Ser Leu Leu Ala Pro Arg Ala Ile Ala			
50 55 60			
Ala Ser Thr Gly Arg Ala Ser Pro Gly Leu Val Gly Arg Phe Thr Leu			
65 70 75 80			
Asp Ala Asn Ser Glu Leu Lys Val Thr Leu Asn Pro Ala Pro Gln Gly			
85 90 95			
Ser Val Val Glu Ile Asn Leu Glu Ala Thr Asn Thr Ser Gly Ser Leu			
100 105 110			
Ile Leu His Trp Gly Ala Leu Arg Pro Asp Arg Gly Glu Trp Leu Leu			
115 120 125			
Pro Ser Arg Lys Pro Asp Gly Thr Thr Val Tyr Lys Asn Arg Ala Leu			
130 135 140			
Arg Thr Pro Phe Ile Lys Ser Gly Asp Asn Ser Thr Leu Lys Ile Glu			
145 150 155 160			

Ile Asp Asp Pro Ala Val Gln Ala Ile Glu Phe Leu Ile Phe Asp Glu
165 170 175

Ala Arg Asn Asn Trp Tyr Lys Asn Asn Gly Gln Asn Phe Gln Ile Gln
180 185 190

Leu Gln Ala Ser Gln Tyr Gln Gly Gln Gly Thr Ser Thr Ala Thr Ser
195 200 205

Ser Thr Val Val Pro Glu Asp Leu Val Gln Ile Gln Ser Tyr Leu Arg
210 215 220

Trp Glu Arg Lys Gly Lys Gln Ser Tyr Thr Pro Glu Gln Glu Lys Glu
225 230 235 240

Glu Tyr Glu Ala Ala Arg Thr Glu Leu Ile Glu Glu Leu Asn Lys Gly
245 250 255

Val Ser Leu Glu Lys Leu Arg Ala Lys Leu Thr Lys Thr Pro Glu Ala
260 265 270

Thr Asp Ser Asn Ala Pro Ala Ser Glu Ser Thr Val Thr Thr Lys Val
275 280 285

Pro Glu Glu Leu Val Gln Val Gln Ala Tyr Ile Arg Trp Glu Lys Ala
290 295 300

Gly Lys Pro Asn Tyr Ala Pro Glu Lys Gln Leu Val Glu Phe Glu Glu
305 310 315 320

Ala Arg Lys Glu Leu Gln Ser Glu Leu Asp Lys Gly Thr Ser Val Glu
325 330 335

Gln Leu Arg Asn Lys Ile Leu Lys Gly Asn Ile Glu Thr Lys Val Ser
340 345 350

Lys Gln Leu Lys Asp Lys Lys Tyr Phe Ser Val Glu Arg Ile Gln Arg
355 360 365

Lys Lys Arg Asp Ile Val Gln Leu Leu Lys Lys His Lys Pro Thr Val
370 375 380

Met Glu Ala Gln Val Glu Thr Pro Lys Gln Pro Thr Val Leu Asp Leu
385 390 395 400

Phe Thr Lys Ser Leu Gln Glu Gln Asp Asn Cys Glu Val Leu Ser Arg
405 410 415

Lys Leu Phe Lys Phe Gly Asp Lys Glu Ile Leu Gly Ile Thr Thr Val
420 425 430

Ala Leu Gly Lys Thr Lys Val His Leu Ala Thr Asn Tyr Met Glu Pro
435 440 445

Leu Ile Leu His Trp Ala Leu Ser Lys Glu Asn Gly Glu Trp Gln Ala
450 455 460

Pro Pro Ser Ser Ile Leu Pro Ser Gly Ser Ser Leu Leu Asp Lys Ala
465 470 475 480

Cys Glu Thr Ser Phe Ser Glu Tyr Glu Leu Asn Gly Leu His Cys Gln
485 490 495

Val Val Glu Ile Glu Leu Asp Asp Gly Gly Tyr Lys Arg Met Pro Phe
500 505 510

Val Leu Arg Ser Gly Glu Thr Trp Met Lys Asn Asn Gly Ser Asp Phe
515 520 525

Tyr Leu Asp Phe Ser Thr Lys Val Ala Lys Asn Thr Lys Asp Thr Gly
530 535 540

Asp Ala Gly Lys Gly Thr Ala Glu Ala Leu Leu Glu Arg Ile Ala Asp
545 550 555 560

Leu Glu Glu Asp Ala Gln Arg Ser Leu Met His Arg Phe Asn Ile Ala
565 570 575

Ala Asp Leu Val Asp Gln Ala Arg Asp Asn Gly Leu Leu Gly Ile Ile
580 585 590

Gly Ile Phe Val Trp Ile Gly Phe Met Ala Thr Arg Gln Leu Ile Trp
595 600 605

Asn Lys Asn Tyr Asn Val Lys Pro Arg Glu Ile Ser Lys Ala Gln Asp
610 615 620

Arg Phe Thr Asp Asp Leu Glu Asn Met Tyr Arg Thr Tyr Pro Gln Tyr
625 630 635 640

Gln Glu Ile Leu Arg Met Ile Met Ser Ala Val Gly Arg Gly Glu
645 650 655

Gly Asp Val Gly Gln Arg Ile Arg Asp Glu Ile Leu Val Ile Gln Arg
660 665 670

Asn Asn Asp Cys Lys Gly Gly Met Met Glu Glu Trp His Gln Lys Leu
675 680 685

His Asn Asn Thr Ser Pro Asp Asp Val Val Ile Cys Gln Ala Leu Leu
690 695 700

Asp Tyr Ile Lys Ser Asp Phe Asp Thr Gly Val Tyr Trp Asp Thr Leu
705 710 715 720

Lys Lys Gly Gly Ile Thr Lys Glu Arg Leu Leu Ser Tyr Asp Arg Pro
725 730 735

Ile His Ser Glu Pro Asn Phe Arg Ser Glu Gln Lys Asp Ser Leu Leu
740 745 750

Arg Asp Leu Gly Asn Tyr Met Arg Ser Leu Lys Ala Val His Ser Gly
755 760 765

Ala Asp Leu Glu Ser Ala Ile Ala Thr Cys Met Gly Tyr Lys Ser Glu
770 775 780

Gly Glu Gly Phe Met Val Gly Val Gln Ile Asn Pro Val Lys Gly Leu
785 790 795 800

Pro Ser Gly Phe Pro Lys Leu Leu Glu Phe Ile Leu Asp His Val Glu
805 810 815

Asp Lys Ser Ala Arg Pro Leu Leu Gly Gly Leu Leu Glu Ala Arg Ala
820 825 830

Glu Leu His Pro Leu Leu Leu Gly Ser Pro Glu Arg Met Lys Asp Leu
835 840 845

Ile Phe Leu Asp Ile Ala Leu Asp Ser Thr Phe Arg Thr Ala Val Glu
850 855 860

Arg Ser Tyr Glu Glu Leu Asn Asn Val Glu Pro Glu Lys Ile Met Tyr
865 870 875 880

Phe Ile Ser Leu Val Leu Glu Asn Leu Ala Leu Ser Thr Asp Asp Asn
885 890 895

Glu Asp Ile Leu Tyr Cys Leu Lys Gly Trp Asn Gln Ala Val Glu Met
900 905 910

Ala Lys Gln Lys Asn Asn Gln Trp Ala Leu Tyr Ala Lys Ala Phe Leu
915 920 925

Asp Arg Thr Arg Leu Ala Leu Ala Ser Lys Gly Glu Gln Tyr Tyr Asn
930 935 940 945 950 955 960 965 970 975 980 985 990
Leu Met Gln Pro Ser Ala Glu Tyr Leu Gly Ser Leu Leu Asn Ile Asp
945 950 955 960
Gln Trp Ala Val Asn Ile Phe Thr Glu Glu Ile Ile Arg Gly Gly Ser
965 970 975
Ala Ala Thr Leu Ser Ala Leu Leu Asn Arg Ile Asp Pro Val Leu Arg
980 985 990
Asn Val Ala Gln Leu Gly Ser Trp Gln Val Ile Ser Pro Val Glu Val
995 1000 1005
Ser Gly Tyr Ile Val Val Val Asp Glu Leu Leu Ala Val Gln Asn
1010 1015 1020
Lys Ser Tyr Asp Lys Pro Thr Ile Leu Val Ala Lys Ser Val Lys
1025 1030 1035
Gly Glu Glu Glu Ile Pro Asp Gly Val Val Gly Val Ile Thr Pro
1040 1045 1050
Asp Met Pro Asp Val Leu Ser His Val Ser Val Arg Ala Arg Asn
1055 1060 1065
Cys Lys Val Leu Phe Ala Thr Cys Phe Asp Pro Asn Thr Leu Ser
1070 1075 1080
Glu Leu Gln Gly His Asp Gly Lys Val Phe Ser Phe Lys Pro Thr
1085 1090 1095
Ser Ala Asp Ile Thr Tyr Arg Glu Ile Pro Glu Ser Glu Leu Gln
1100 1105 1110
Ser Gly Ser Leu Asn Ala Glu Ala Gly Gln Ala Val Pro Ser Val
1115 1120 1125
Ser Leu Val Lys Lys Phe Leu Gly Lys Tyr Ala Ile Ser Ala
1130 1135 1140
Glu Glu Phe Ser Glu Glu Met Val Gly Ala Lys Ser Arg Asn Val
1145 1150 1155
Ala Tyr Leu Lys Gly Lys Val Pro Ser Trp Val Gly Val Pro Thr
1160 1165 1170

Ser Val Ala Ile Pro Phe Gly Thr Phe Glu Lys Val Leu Ser Asp
1175 1180 1185

Glu Ile Asn Lys Glu Val Ala Gln Thr Ile Gln Met Leu Lys Gly
1190 1195 1200

Lys Leu Ala Gln Asp Asp Phe Ser Ala Leu Gly Glu Ile Arg Lys
1205 1210 1215

Thr Val Leu Asn Leu Thr Ala Pro Thr Gln Leu Ile Lys Glu Leu
1220 1225 1230

Lys Glu Lys Met Leu Gly Ser Gly Met Pro Trp Pro Gly Asp Glu
1235 1240 1245

Gly Asp Gln Arg Trp Glu Gln Ala Trp Met Ala Ile Lys Lys Val
1250 1255 1260

Trp Ala Ser Lys Trp Asn Glu Arg Ala Tyr Phe Ser Thr Arg Lys
1265 1270 1275

Val Lys Leu Asp His Asp Tyr Leu Ser Met Ala Val Leu Val Gln
1280 1285 1290

Glu Ile Val Asn Ala Asp Tyr Ala Phe Val Ile His Thr Thr Asn
1295 1300 1305

Pro Ser Ser Gly Asp Ser Ser Glu Ile Tyr Ala Glu Val Val Lys
1310 1315 1320

Gly Leu Gly Glu Thr Leu Val Gly Ala Tyr Pro Gly Arg Ala Met
1325 1330 1335

Ser Phe Val Cys Lys Lys Asn Asp Leu Asp Ser Pro Lys Val Leu
1340 1345 1350

Gly Phe Pro Ser Lys Pro Ile Gly Val Phe Ile Lys Arg Ser Ile
1355 1360 1365

Ile Phe Arg Ser Asp Ser Asn Gly Glu Asp Leu Glu Gly Tyr Ala
1370 1375 1380

Gly Ala Arg Leu Tyr Asp Ser Val Pro Met Asp Glu Glu Asp Glu
1385 1390 1395

Val Ile Val Asp Tyr Asn Asn Gly Pro Leu Ile Thr Asp Gln Gly
1400 1405 1410

Phe Gln Lys Ser Asn Leu Pro Ser Ile Ala Pro Ala Gly His Ala
1415 1420 1425

Ile Glu Glu Leu Tyr Gly Ser Pro Gln Asp Val Glu Gly Ala Val
1430 1435 1440

Lys Glu Gly Lys Leu Tyr Val Val Gln Thr Arg Pro Gln Met
1445 1450 1455

<210> 14

<211> 4745

<212> DNA

<213> Glycine max

<220>

<221> CDS

<222> (103)..(4482)

<223>

<300>

<308> NCBI / AR400815

<309> 2003-12-18

<400> 14

gcaccaggcct ctccccattt tcacgtgatt cccaatctca cactttctc acaccttcaa 60

ccgattcaac gcaacaaagt gataaagtgt ggatccggga ag atg agc cag agt 114
Met Ser Gln Ser
1

atc ttc cac cag acg gtt ttt tgt caa acg ctt acg gtt gtc gag cat 162
Ile Phe His Gln Thr Val Leu Cys Gln Thr Gln Thr Val Ala Glu His
5 10 15 20

caa agt aag gtt agt tcc ttg gag gtg agt gtc aac aaa gga aag aag 210
Gln Ser Lys Val Ser Ser Leu Glu Val Ser Ala Asn Lys Gly Lys Lys
25 30 35

aac ctc ttt ttg gct cct aca aat ttt cgc ggg agc agg ctg tgt gtg 258
Asn Leu Phe Leu Ala Pro Thr Asn Phe Arg Gly Ser Arg Leu Cys Val
40 45 50

agg aaa cgc aaa tta acc atg gga agg cac cac cac cgc cac gtt gac 306
Arg Lys Arg Lys Leu Thr Met Gly Arg His His His Arg His Val Asp
55 60 65

gct gtt cca cgc gct gtt tta acc acc aat ctg gct tct gag ctt tct	354
Ala Val Pro Arg Ala Val Leu Thr Thr Asn Leu Ala Ser Glu Leu Ser	
70 75 80	
ggg aag ttc aac ctt gac gga aat att gag ttg cag att gct gtt agt	402
Gly Lys Phe Asn Leu Asp Gly Asn Ile Glu Leu Gln Ile Ala Val Ser	
85 90 95 100	
tct tca gaa cca gga gct gca aga caa gta gat ttt aag gtt tca tat	450
Ser Ser Glu Pro Gly Ala Ala Arg Gln Val Asp Phe Lys Val Ser Tyr	
105 110 115	
aat agt gag tct ctg ctt tta cat tgg gga gtt gtg cgt gat cag cca	498
Asn Ser Glu Ser Leu Leu His Trp Gly Val Val Arg Asp Gln Pro	
120 125 130	
ggg aag tgg gtt ctt cct tct cgt cac cca gat gga act aaa aat tat	546
Gly Lys Trp Val Leu Pro Ser Arg His Pro Asp Gly Thr Lys Asn Tyr	
135 140 145	
aag agc aga gct ctt aga act cct ttt gtg aaa tcc gac tca gga tct	594
Lys Ser Arg Ala Leu Arg Thr Pro Phe Val Lys Ser Asp Ser Gly Ser	
150 155 160	
ttc ctt aaa ata gaa att gac gat cct gct gca caa gcc att gag ttc	642
Phe Leu Lys Ile Glu Ile Asp Asp Pro Ala Ala Gln Ala Ile Glu Phe	
165 170 175 180	
ctc ata ctt gat gag gct aag aat aag tgg ttt aag aat aat ggt gag	690
Leu Ile Leu Asp Glu Ala Lys Asn Lys Trp Phe Lys Asn Asn Gly Glu	
185 190 195	
aac ttt cac atc aag tta cca gta aaa agc aag cta tct caa gaa gtt	738
Asn Phe His Ile Lys Leu Pro Val Lys Ser Lys Leu Ser Gln Glu Val	
200 205 210	
tca gtt cct gaa gac ctt gta cag att caa gca tat ctt agg tgg gaa	786
Ser Val Pro Glu Asp Leu Val Gln Ile Gln Ala Tyr Leu Arg Trp Glu	
215 220 225	
cga aag ggt aag cag atg tac act cca gag caa gag aag gag gaa tat	834
Arg Lys Gly Lys Gln Met Tyr Thr Pro Glu Gln Glu Lys Glu Glu Tyr	
230 235 240	
gaa gca gct cgg aat gaa cta ttg gag gaa gta gcc agg ggt act tct	882
Glu Ala Ala Arg Asn Glu Leu Leu Glu Glu Val Ala Arg Gly Thr Ser	
245 250 255 260	
gtg cga gat ctc cat gca agg tta act aag aaa act aaa gct gcc gaa	930
Val Arg Asp Leu His Ala Arg Leu Thr Lys Thr Lys Ala Ala Glu	
265 270 275	
gta aag gag cct tct gtt tct gaa aca aag acc atc cct gat gaa ctt	978
Val Lys Glu Pro Ser Val Ser Glu Thr Lys Thr Ile Pro Asp Glu Leu	
280 285 290	
gta cag att caa gct ttt ata cga tgg gaa aaa gct ggg aag cct aac	1026
Val Gln Ile Gln Ala Phe Ile Arg Trp Glu Lys Ala Gly Lys Pro Asn	
295 300 305	
tac tct cgg gaa caa caa ctt atg gaa ttt gag gaa gca aga aaa gaa	1074
Tyr Ser Arg Glu Gln Gln Leu Met Glu Phe Glu Glu Ala Arg Lys Glu	
310 315 320	

ttg tta gaa gag ctt gag aag ggg gct tct ctg gat gcg ata cgg aag Leu Leu Glu Glu Leu Glu Lys Gly Ala Ser Leu Asp Ala Ile Arg Lys 325 330 335 340	1122
aag att gtc aaa gga gag ata caa act aaa gtt gcc aag caa ttg aaa Lys Ile Val Lys Gly Glu Ile Gln Thr Lys Val Ala Lys Gln Leu Lys 345 350 355	1170
acc aaa aaa tac ttt cgt gct gaa aga ata cag agg aaa aag aga gat Thr Lys Lys Tyr Phe Arg Ala Glu Arg Ile Gln Arg Lys Lys Arg Asp 360 365 370	1218
ttg atg cag ctt atc aac cga aat gtt gca caa aat ata gtt gaa caa Leu Met Gln Leu Ile Asn Arg Asn Val Ala Gln Asn Ile Val Glu Gln 375 380 385	1266
gtt ata gat gct cca aaa gcc ttg aca gta att gaa cat tat gcc aat Val Ile Asp Ala Pro Lys Ala Leu Thr Val Ile Glu His Tyr Ala Asn 390 395 400	1314
gca agg gaa gaa tat gaa agt ggt cct gtt ttg aat aag aca ata tac Ala Arg Glu Glu Tyr Glu Ser Gly Pro Val Leu Asn Lys Thr Ile Tyr 405 410 415 420	1362
aag ctt ggt gat aat tat ctt ctg gtc ctt gtt acc aag gat gct ggc Lys Leu Gly Asp Asn Tyr Leu Leu Val Leu Val Thr Lys Asp Ala Gly 425 430 435	1410
aag att aag gtt cac cta gct aca gac tcg aaa aaa cct ttt aca ctt Lys Ile Lys Val His Leu Ala Thr Asp Ser Lys Lys Pro Phe Thr Leu 440 445 450	1458
cac tgg gcc tta tct aga aca tct gaa gag tgg ttg gta cca cct gaa His Trp Ala Leu Ser Arg Thr Ser Glu Glu Trp Leu Val Pro Pro Glu 455 460 465	1506
act gct ctg ccc cct gga tct gtt act atg aat gag gcc gct gaa aca Thr Ala Leu Pro Pro Gly Ser Val Thr Met Asn Glu Ala Ala Glu Thr 470 475 480	1554
cct ttc aaa gct ggt tct tcg tct cat cct tct tat gag gtc cag tcc Pro Phe Lys Ala Gly Ser Ser Ser His Pro Ser Tyr Glu Val Gln Ser 485 490 495 500	1602
ttg gat ata gag gtt gat gat gat act ttt aaa gga ata cct ttt gtc Leu Asp Ile Glu Val Asp Asp Asp Thr Phe Lys Gly Ile Pro Phe Val 505 510 515	1650
att ctg tcg gat gga gaa tgg ata aag aac aat gga tca aat ttt tat Ile Leu Ser Asp Gly Glu Trp Ile Lys Asn Asn Gly Ser Asn Phe Tyr 520 525 530	1698
att gaa ttt ggt ggg aag aag cag aaa cag aag gat ttt ggc aat ggc Ile Glu Phe Gly Gly Lys Lys Gln Lys Gln Lys Asp Phe Gly Asn Gly 535 540 545	1746
aaa ggt aca gcc aag ttc ttg ttg aat aaa ata gca gaa atg gaa agt Lys Gly Thr Ala Lys Phe Leu Leu Asn Lys Ile Ala Glu Met Glu Ser 550 555 560	1794
gag gca caa aag tcc ttc atg cat cga ttt aac att gca tca gat ttg Glu Ala Gln Lys Ser Phe Met His Arg Phe Asn Ile Ala Ser Asp Leu 565 570 575 580	1842

ata gat gaa gcc aaa aat gct ggt caa ctg ggt ctt gcg ggg att ttg Ile Asp Glu Ala Lys Asn Ala Gly Gln Leu Gly Leu Ala Gly Ile Leu 585 590 595	1890
gtg tgg atg aga ttc atg gct aca agg cag ctc ata tgg aac aaa aat Val Trp Met Arg Phe Met Ala Thr Arg Gln Leu Ile Trp Asn Lys Asn 600 605 610	1938
tac aat gtg aag cca cgt gag ata agt aaa gca cag gat agg ctt aca Tyr Asn Val Lys Pro Arg Glu Ile Ser Lys Ala Gln Asp Arg Leu Thr 615 620 625	1986
gac ttg ctc caa gat gtt tat gca aat tat cca cag tat agg gaa att Asp Leu Leu Gln Asp Val Tyr Ala Asn Tyr Pro Gln Tyr Arg Glu Ile 630 635 640	2034
gtg agg atg atc ttg tcc act gtt ggt cgt gga ggt gaa gga gat gtc Val Arg Met Ile Leu Ser Thr Val Gly Arg Gly Glu Gly Asp Val 645 650 655 660	2082
gga cag agg att cgg gat gaa atc ctt gtt atc cag aga aat aat gat Gly Gln Arg Ile Arg Asp Glu Ile Leu Val Ile Gln Arg Asn Asn Asp 665 670 675	2130
tgc aaa ggt gga atg atg gag gaa tgg cac cag aaa tta cac aat aat Cys Lys Gly Met Met Glu Glu Trp His Gln Lys Leu His Asn Asn 680 685 690	2178
act agt cct gat gat gtt gta atc tgt cag gca cta att gat tat ata Thr Ser Pro Asp Asp Val Val Ile Cys Gln Ala Leu Ile Asp Tyr Ile 695 700 705	2226
aat agt gac ttt gat att ggt gtt tac tgg aaa gca ttg aat gac aat Asn Ser Asp Phe Asp Ile Gly Val Tyr Trp Lys Ala Leu Asn Asp Asn 710 715 720	2274
aga ata aca aaa gag cgg ctt ctg agc tat gac cgt gcc atc cat tct Arg Ile Thr Lys Glu Arg Leu Leu Ser Tyr Asp Arg Ala Ile His Ser 725 730 735 740	2322
gaa cca aat ttt agg aga gat cag aag gaa ggt ctt ctg cga gat ctg Glu Pro Asn Phe Arg Arg Asp Gln Lys Glu Gly Leu Leu Arg Asp Leu 745 750 755	2370
gga aac tac atg agg act tta aag gca gtt cat tcc ggt gca gat ctt Gly Asn Tyr Met Arg Thr Leu Lys Ala Val His Ser Gly Ala Asp Leu 760 765 770	2418
gaa tct gct att tca aat tgt atg ggc tac aaa tct gag ggt cag ggc Glu Ser Ala Ile Ser Asn Cys Met Gly Tyr Lys Ser Glu Gly Gln Gly 775 780 785	2466
ttc atg gta ggg gtc aag ata aat cca gtg ccg ggt ttg cct act ggt Phe Met Val Gly Val Lys Ile Asn Pro Val Pro Gly Leu Pro Thr Gly 790 795 800	2514
ttt cca gaa tta ctt gag ttt gtc atg gaa cac gtt gaa gag aag aat Phe Pro Glu Leu Leu Glu Phe Val Met Glu His Val Glu Glu Lys Asn 805 810 815 820	2562
gtt gaa cca ctt ctt gag ggg ttg ctt gag gct cgt cag gaa ctc caa Val Glu Pro Leu Leu Glu Gly Leu Leu Glu Ala Arg Gln Glu Leu Gln 825 830 835	2610

cca tca ctc agt aaa tcc caa agt cgt ctg aaa gat ctt ata ttt ttg	2658
Pro Ser Leu Ser Lys Ser Gln Ser Arg Leu Lys Asp Leu Ile Phe Leu	
840 845 850	
gat gtt gcc ctt gat tct aca gtt aga aca gca gtg gaa agg agt tat	2706
Asp Val Ala Leu Asp Ser Thr Val Arg Thr Ala Val Glu Arg Ser Tyr	
855 860 865	
gag gaa tta aac aat gct gga cct gag aaa ata atg tac ttc att agc	2754
Glu GJu Leu Asn Asn Ala Gly Pro Glu Lys Ile Met Tyr Phe Ile Ser	
870 875 880	
ttg gtt ctt gaa aat ctc gca ctt tca tcg gat gac aat gaa gat ctt	2802
Leu Val Leu Glu Asn Leu Ala Leu Ser Ser Asp Asp Asn Glu Asp Leu	
885 890 895 900	
atc tac tgt ttg aag gga tgg gat gtt gcc tta agc atg tgc aag att	2850
Ile Tyr Cys Leu Lys Gly Trp Asp Val Ala Leu Ser Met Cys Lys Ile	
905 910 915	
aaa gat act cat tgg gca ttg tac gca aaa tca gtc ctt gac aga acc	2898
Lys Asp Thr His Trp Ala Leu Tyr Ala Lys Ser Val Leu Asp Arg Thr	
920 925 930	
cgt ctt gca cta aca aac aag gct cat tta tac cag gaa att ctg caa	2946
Arg Leu Ala Leu Thr Asn Lys Ala His Leu Tyr Gln Glu Ile Leu Gln	
935 940 945	
cca tcg gca gaa tat ctt gga tca ctg ctt ggc gtg gac aaa tgg gcc	2994
Pro Ser Ala Glu Tyr Leu Gly Ser Leu Leu Gly Val Asp Lys Trp Ala	
950 955 960	
gtg gaa ata ttt act gaa gaa att atc cgt gct gga tct gct gct tct	3042
Val Glu Ile Phe Thr Glu Glu Ile Ile Arg Ala Gly Ser Ala Ala Ser	
965 970 975 980	
ttg tct act ctt cta aat cga ctg gat cct gtg ctc cga aag aca gct	3090
Leu Ser Thr Leu Leu Asn Arg Leu Asp Pro Val Leu Arg Lys Thr Ala	
985 990 995	
cat ctt gga agc tgg cag gtt att agt cca gtt gaa act gtt gga	3135
His Leu Gly Ser Trp Gln Val Ile Ser Pro Val Glu Thr Val Gly	
1000 1005 1010	
tat gtt gag gtt gta gat gag ttg ctt act gtt caa aac aaa tca	3180
Tyr Val Glu Val Val Asp Glu Leu Leu Thr Val Gln Asn Lys Ser	
1015 1020 1025	
tat gag cga cct aca att ttg ata gcc aat agt gtg aaa gga gag	3225
Tyr Glu Arg Pro Thr Ile Leu Ile Ala Asn Ser Val Lys Gly Glu	
1030 1035 1040	
gaa gaa att cca gat ggt aca gtt gct gtc ctg aca cct gat atg	3270
Glu Glu Ile Pro Asp Gly Thr Val Ala Val Leu Thr Pro Asp Met	
1045 1050 1055	
cct gat gtc cta tcc cat gtt tct gta cga gca aga aat agc aag	3315
Pro Asp Val Leu Ser His Val Ser Val Arg Ala Arg Asn Ser Lys	
1060 1065 1070	
gtg tgt ttt gct aca tgc ttt gat ccc aat atc ctg gct aac ctc	3360
Val Cys Phe Ala Thr Cys Phe Asp Pro Asn Ile Leu Ala Asn Leu	
1075 1080 1085	

caa	gaa	tat	aaa	gga	aag	ctt	tta	cgc	tta	aag	cct	aca	tct	gct	3405
Gln	Glu	Tyr	Lys	Gly	Lys	Leu	Leu	Arg	Leu	Lys	Pro	Thr	Ser	Ala	
1090						1095							1100		
gat	gta	gtt	tat	agt	gag	gtg	aag	gag	ggt	gag	ttt	att	gat	gac	3450
Asp	Val	Val	Tyr	Ser	Glu	Val	Lys	Glu	Gly	Glu	Phe	Ile	Asp	Asp	
1105						1110							1115		
aaa	tca	act	caa	ctg	aaa	gat	gtt	ggg	tct	gtg	tca	ccc	ata	tct	3495
Lys	Ser	Thr	Gln	Leu	Lys	Asp	Val	Gly	Ser	Val	Ser	Pro	Ile	Ser	
1120						1125							1130		
ctg	gcc	aga	aag	aag	ttt	agt	ggg	aga	tat	gct	gtc	tca	tct	gaa	3540
Leu	Ala	Arg	Lys	Lys	Phe	Ser	Gly	Arg	Tyr	Ala	Val	Ser	Ser	Glu	
1135						1140							1145		
gaa	ttc	act	ggt	gaa	atg	gtt	gga	gct	aaa	tct	cgt	aat	atc	tct	3585
Glu	Phe	Thr	Gly	Glu	Met	Val	Gly	Ala	Lys	Ser	Arg	Asn	Ile	Ser	
1150						1155							1160		
tat	tta	aaa	ggg	aaa	gta	gct	tct	tgg	att	gga	att	cct	acc	tca	3630
Tyr	Leu	Lys	Gly	Lys	Val	Ala	Ser	Trp	Ile	Gly	Ile	Pro	Thr	Ser	
1165						1170							1175		
gtt	gcc	ata	cca	ttt	gga	gtt	ttt	gaa	cat	gtt	ctt	tct	gat	aaa	3675
Val	Ala	Ile	Pro	Phe	Gly	Val	Phe	Glu	His	Val	Leu	Ser	Asp	Lys	
1180						1185							1190		
cca	aac	cag	gca	gtg	gct	gag	agg	gtc	aat	aat	ttg	aaa	aag	aag	3720
Pro	Asn	Gln	Ala	Val	Ala	Glu	Arg	Val	Asn	Asn	Leu	Lys	Lys	Lys	
1195						1200							1205		
tta	act	gag	gga	gac	ttc	agt	gtt	ctc	aag	gag	att	cgt	gaa	aca	3765
Leu	Thr	Glu	Gly	Asp	Phe	Ser	Val	Leu	Lys	Glu	Ile	Arg	Glu	Thr	
1210						1215							1220		
gtt	cta	cag	ttg	aat	gca	cca	tcc	cag	ttg	gta	gag	gag	ttg	aaa	3810
Val	Leu	Gln	Leu	Asn	Ala	Pro	Ser	Gln	Leu	Val	Glu	Glu	Leu	Lys	
1225						1230							1235		
act	aaa	atg	aag	agt	tct	gga	atg	ccg	tgg	ccg	ggt	gat	gaa	ggt	3855
Thr	Lys	Met	Lys	Ser	Ser	Gly	Met	Pro	Trp	Pro	Gly	Asp	Glu	Gly	
1240						1245							1250		
gaa	caa	cga	tgg	gaa	caa	gct	tgg	ata	gct	ata	aaa	aag	gtg	tgg	3900
Glu	Gln	Arg	Trp	Glu	Gln	Ala	Trp	Ile	Ala	Ile	Lys	Lys	Val	Trp	
1255						1260							1265		
ggc	tca	aag	tgg	aat	gaa	aga	gca	tac	tcc	agc	aca	aga	aaa	gtg	3945
Gly	Ser	Lys	Trp	Asn	Glu	Arg	Ala	Tyr	Phe	Ser	Thr	Arg	Lys	Val	
1270						1275							1280		
aaa	ctc	gac	cac	gaa	tat	ctt	tcc	atg	gca	gtc	ctg	gtt	cag	gaa	3990
Lys	Leu	Asp	His	Glu	Tyr	Leu	Ser	Met	Ala	Val	Leu	Val	Gln	Glu	
1285						1290							1295		
gtg	ata	aat	gct	gac	tat	gct	ttt	gtc	atc	cac	aca	act	aac	cct	4035
Val	Ile	Asn	Ala	Asp	Tyr	Ala	Phe	Val	Ile	His	Thr	Thr	Asn	Pro	
1300						1305							1310		
gcc	tct	gga	gat	tca	tcg	gaa	ata	tat	gct	gag	gtg	gta	aag	gga	4080
Ala	Ser	Gly	Asp	Ser	Ser	Glu	Ile	Tyr	Ala	Glu	Val	Val	Lys	Gly	
1315						1320							1325		

ctt gga gaa aca	ctg gtt gga gct tat	cct ggt cgt gct ttg	agt	4125	
Leu Gly Glu Thr	Leu Val Gly Ala Tyr	Pro Gly Arg Ala Leu	Ser		
1330	1335	1340			
ttt atc tgc aag	aaa cgt gat ttg aac	tct cct cag gtc ttg	ggt	4170	
Phe Ile Cys Lys	Lys Arg Asp Leu Asn	Ser Pro Gln Val Leu	Gly		
1345	1350	1355			
tat cct agc aaa	cct gtc ggc cta ttt	ata aga cag tca att	att	4215	
Tyr Pro Ser Lys	Pro Val Gly Leu Phe	Ile Arg Gln Ser Ile	Ile		
1360	1365	1370			
ttc cga tct gat	tcc aat ggt gaa gat	cta gaa ggt tat gct	ggt	4260	
Phe Arg Ser Asp	Ser Asn Gly Glu Asp	Leu Glu Gly Tyr Ala	Gly		
1375	1380	1385			
gca ggt ctt tat	gac agt gtg cca atg	gat gaa gcc gag aag	gtg	4305	
Ala Gly Leu Tyr	Asp Ser Val Pro Met	Asp Glu Ala Glu Lys	Val		
1390	1395	1400			
gtg ctt gat tat	tca tca gac aaa ctg	atc ctt gat ggt agt	ttt	4350	
Val Leu Asp Tyr	Ser Ser Asp Lys Leu	Ile Leu Asp Gly Ser	Phe		
1405	1410	1415			
cgc cag tca atc	ttg tcc agc att gcc	cgt gca gga aat gaa	att	4395	
Arg Gln Ser Ile	Leu Ser Ser Ile Ala	Arg Ala Gly Asn Glu	Ile		
1420	1425	1430			
gaa gag ttg tat	ggc act cct cag gac	att gaa ggt gtc atc	aag	4440	
Glu Glu Leu Tyr	Gly Thr Pro Gln Asp	Ile Glu Gly Val Ile	Lys		
1435	1440	1445			
gat ggc aaa gtc	tat gtt gtc cag acc	aga cca caa atg taa		4482	
Asp Gly Lys Val	Tyr Val Val Gln Thr	Arg Pro Gln Met			
1450	1455				
acttgataccatgttttc taagccaccc acctcaacta tgttcatccc cgagcaacac					4542
gtcgttcaa acgtggccgt ggcagttct gtgagttcaa gagtaacccc cggattacca					4602
aacatggcct tatagattta ttacatgata tattgaaaat taaggaataa gtgtataaaa					4662
acggaatatt gtaaattaag aaaaatttag acggtcttat atattcttt tccctactat					4722
aaaaaaaaaaa aaaaaaaaaaaa aaa					4745

<210> 15

<211> 1459

<212> PRT

<213> Glycine max

<400> 15

Met Ser Gln Ser Ile Phe His Gln Thr Val Leu Cys Gln Thr Gln Thr
1 5 10 15

Val Ala Glu His Gln Ser Lys Val Ser Ser Leu Glu Val Ser Ala Asn

20

25

30

Lys Gly Lys Lys Asn Leu Phe Leu Ala Pro Thr Asn Phe Arg Gly Ser
 35 40 45

Arg Leu Cys Val Arg Lys Arg Lys Leu Thr Met Gly Arg His His His
 50 55 60

Arg His Val Asp Ala Val Pro Arg Ala Val Leu Thr Thr Asn Leu Ala
 65 70 75 80

Ser Glu Leu Ser Gly Lys Phe Asn Leu Asp Gly Asn Ile Glu Leu Gln
 85 90 95

Ile Ala Val Ser Ser Ser Glu Pro Gly Ala Ala Arg Gln Val Asp Phe
 100 105 110

Lys Val Ser Tyr Asn Ser Glu Ser Leu Leu Leu His Trp Gly Val Val
 115 120 125

Arg Asp Gln Pro Gly Lys Trp Val Leu Pro Ser Arg His Pro Asp Gly
 130 135 140

Thr Lys Asn Tyr Lys Ser Arg Ala Leu Arg Thr Pro Phe Val Lys Ser
 145 150 155 160

Asp Ser Gly Ser Phe Leu Lys Ile Glu Ile Asp Asp Pro Ala Ala Gln
 165 170 175

Ala Ile Glu Phe Leu Ile Leu Asp Glu Ala Lys Asn Lys Trp Phe Lys
 180 185 190

Asn Asn Gly Glu Asn Phe His Ile Lys Leu Pro Val Lys Ser Lys Leu
 195 200 205

Ser Gln Glu Val Ser Val Pro Glu Asp Leu Val Gln Ile Gln Ala Tyr
 210 215 220

Leu Arg Trp Glu Arg Lys Gly Lys Gln Met Tyr Thr Pro Glu Gln Glu
 225 230 235 240

Lys Glu Glu Tyr Glu Ala Ala Arg Asn Glu Leu Leu Glu Glu Val Ala
 245 250 255

Arg Gly Thr Ser Val Arg Asp Leu His Ala Arg Leu Thr Lys Lys Thr
 260 265 270

Lys Ala Ala Glu Val Lys Glu Pro Ser Val Ser Glu Thr Lys Thr Ile

275

280

285

Pro Asp Glu Leu Val Gln Ile Gln Ala Phe Ile Arg Trp Glu Lys Ala
290 295 300

Gly Lys Pro Asn Tyr Ser Arg Glu Gln Gln Leu Met Glu Phe Glu Glu
305 310 315 320

Ala Arg Lys Glu Leu Leu Glu Leu Glu Lys Gly Ala Ser Leu Asp
325 330 335

Ala Ile Arg Lys Lys Ile Val Lys Gly Glu Ile Gln Thr Lys Val Ala
340 345 350

Lys Gln Leu Lys Thr Lys Tyr Phe Arg Ala Glu Arg Ile Gln Arg
355 360 365

Lys Lys Arg Asp Leu Met Gln Leu Ile Asn Arg Asn Val Ala Gln Asn
370 375 380

Ile Val Glu Gln Val Ile Asp Ala Pro Lys Ala Leu Thr Val Ile Glu
385 390 395 400

His Tyr Ala Asn Ala Arg Glu Glu Tyr Glu Ser Gly Pro Val Leu Asn
405 410 415

Lys Thr Ile Tyr Lys Leu Gly Asp Asn Tyr Leu Leu Val Leu Val Thr
420 425 430

Lys Asp Ala Gly Lys Ile Lys Val His Leu Ala Thr Asp Ser Lys Lys
435 440 445

Pro Phe Thr Leu His Trp Ala Leu Ser Arg Thr Ser Glu Glu Trp Leu
450 455 460

Val Pro Pro Glu Thr Ala Leu Pro Pro Gly Ser Val Thr Met Asn Glu
465 470 475 480

Ala Ala Glu Thr Pro Phe Lys Ala Gly Ser Ser Ser His Pro Ser Tyr
485 490 495

Glu Val Gln Ser Leu Asp Ile Glu Val Asp Asp Asp Thr Phe Lys Gly
500 505 510

Ile Pro Phe Val Ile Leu Ser Asp Gly Glu Trp Ile Lys Asn Asn Gly
515 520 525

Ser Asn Phe Tyr Ile Glu Phe Gly Gly Lys Lys Gln Lys Gln Lys Asp
Page 80

530

535

540

Phe Gly Asn Gly Lys Gly Thr Ala Lys Phe Leu Leu Asn Lys Ile Ala
545 550 555 560

Glu Met Glu Ser Glu Ala Gln Lys Ser Phe Met His Arg Phe Asn Ile
565 570 575

Ala Ser Asp Leu Ile Asp Glu Ala Lys Asn Ala Gly Gln Leu Gly Leu
580 585 590

Ala Gly Ile Leu Val Trp Met Arg Phe Met Ala Thr Arg Gln Leu Ile
595 600 605

Trp Asn Lys Asn Tyr Asn Val Lys Pro Arg Glu Ile Ser Lys Ala Gln
610 615 620

Asp Arg Leu Thr Asp Leu Leu Gln Asp Val Tyr Ala Asn Tyr Pro Gln
625 630 635 640

Tyr Arg Glu Ile Val Arg Met Ile Leu Ser Thr Val Gly Arg Gly Gly
645 650 655

Glu Gly Asp Val Gly Gln Arg Ile Arg Asp Glu Ile Leu Val Ile Gln
660 665 670

Arg Asn Asn Asp Cys Lys Gly Gly Met Met Glu Glu Trp His Gln Lys
675 680 685

Leu His Asn Asn Thr Ser Pro Asp Asp Val Val Ile Cys Gln Ala Leu
690 695 700

Ile Asp Tyr Ile Asn Ser Asp Phe Asp Ile Gly Val Tyr Trp Lys Ala
705 710 715 720

Leu Asn Asp Asn Arg Ile Thr Lys Glu Arg Leu Leu Ser Tyr Asp Arg
725 730 735

Ala Ile His Ser Glu Pro Asn Phe Arg Arg Asp Gln Lys Glu Gly Leu
740 745 750

Leu Arg Asp Leu Gly Asn Tyr Met Arg Thr Leu Lys Ala Val His Ser
755 760 765

Gly Ala Asp Leu Glu Ser Ala Ile Ser Asn Cys Met Gly Tyr Lys Ser
770 775 780

Glu Gly Gln Gly Phe Met Val Gly Val Lys Ile Asn Pro Val Pro Gly

785

790

795

800

Leu Pro Thr Gly Phe Pro Glu Leu Leu Glu Phe Val Met Glu His Val
805 810 815

Glu Glu Lys Asn Val Glu Pro Leu Leu Glu Gly Leu Leu Glu Ala Arg
820 825 830

Gln Glu Leu Gln Pro Ser Leu Ser Lys Ser Gln Ser Arg Leu Lys Asp
835 840 845

Leu Ile Phe Leu Asp Val Ala Leu Asp Ser Thr Val Arg Thr Ala Val
850 855 860

Glu Arg Ser Tyr Glu Glu Leu Asn Asn Ala Gly Pro Glu Lys Ile Met
865 870 875 880

Tyr Phe Ile Ser Leu Val Leu Glu Asn Leu Ala Leu Ser Ser Asp Asp
885 890 895

Asn Glu Asp Leu Ile Tyr Cys Leu Lys Gly Trp Asp Val Ala Leu Ser
900 905 910

Met Cys Lys Ile Lys Asp Thr His Trp Ala Leu Tyr Ala Lys Ser Val
915 920 925

Leu Asp Arg Thr Arg Leu Ala Leu Thr Asn Lys Ala His Leu Tyr Gln
930 935 940

Glu Ile Leu Gln Pro Ser Ala Glu Tyr Leu Gly Ser Leu Leu Gly Val
945 950 955 960

Asp Lys Trp Ala Val Glu Ile Phe Thr Glu Glu Ile Ile Arg Ala Gly
965 970 975

Ser Ala Ala Ser Leu Ser Thr Leu Leu Asn Arg Leu Asp Pro Val Leu
980 985 990

Arg Lys Thr Ala His Leu Gly Ser Trp Gln Val Ile Ser Pro Val Glu
995 1000 1005

Thr Val Gly Tyr Val Glu Val Val Asp Glu Leu Leu Thr Val Gln
1010 1015 1020

Asn Lys Ser Tyr Glu Arg Pro Thr Ile Leu Ile Ala Asn Ser Val
1025 1030 1035

Lys Gly Glu Glu Glu Ile Pro Asp Gly Thr Val Ala Val Leu Thr
Page 82

1040

1045

1050

Pro Asp Met Pro Asp Val Leu Ser His Val Ser Val Arg Ala Arg
1055 1060 1065

Asn Ser Lys Val Cys Phe Ala Thr Cys Phe Asp Pro Asn Ile Leu
1070 1075 1080

Ala Asn Leu Gln Glu Tyr Lys Gly Lys Leu Leu Arg Leu Lys Pro
1085 1090 1095

Thr Ser Ala Asp Val Val Tyr Ser Glu Val Lys Glu Gly Glu Phe
1100 1105 1110

Ile Asp Asp Lys Ser Thr Gln Leu Lys Asp Val Gly Ser Val Ser
1115 1120 1125

Pro Ile Ser Leu Ala Arg Lys Lys Phe Ser Gly Arg Tyr Ala Val
1130 1135 1140

Ser Ser Glu Glu Phe Thr Gly Glu Met Val Gly Ala Lys Ser Arg
1145 1150 1155

Asn Ile Ser Tyr Leu Lys Gly Lys Val Ala Ser Trp Ile Gly Ile
1160 1165 1170

Pro Thr Ser Val Ala Ile Pro Phe Gly Val Phe Glu His Val Leu
1175 1180 1185

Ser Asp Lys Pro Asn Gln Ala Val Ala Glu Arg Val Asn Asn Leu
1190 1195 1200

Lys Lys Lys Leu Thr Glu Gly Asp Phe Ser Val Leu Lys Glu Ile
1205 1210 1215

Arg Glu Thr Val Leu Gln Leu Asn Ala Pro Ser Gln Leu Val Glu
1220 1225 1230

Glu Leu Lys Thr Lys Met Lys Ser Ser Gly Met Pro Trp Pro Gly
1235 1240 1245

Asp Glu Gly Glu Gln Arg Trp Glu Gln Ala Trp Ile Ala Ile Lys
1250 1255 1260

Lys Val Trp Gly Ser Lys Trp Asn Glu Arg Ala Tyr Phe Ser Thr
1265 1270 1275

Arg Lys Val Lys Leu Asp His Glu Tyr Leu Ser Met Ala Val Leu
Page 83

1280

1285

1290

Val Gln Glu Val Ile Asn Ala Asp Tyr Ala Phe Val Ile His Thr
1295 1300 1305

Thr Asn Pro Ala Ser Gly Asp Ser Ser Glu Ile Tyr Ala Glu Val
1310 1315 1320

Val Lys Gly Leu Gly Glu Thr Leu Val Gly Ala Tyr Pro Gly Arg
1325 1330 1335

Ala Leu Ser Phe Ile Cys Lys Lys Arg Asp Leu Asn Ser Pro Gln
1340 1345 1350

Val Leu Gly Tyr Pro Ser Lys Pro Val Gly Leu Phe Ile Arg Gln
1355 1360 1365

Ser Ile Ile Phe Arg Ser Asp Ser Asn Gly Glu Asp Leu Glu Gly
1370 1375 1380

Tyr Ala Gly Ala Gly Leu Tyr Asp Ser Val Pro Met Asp Glu Ala
1385 1390 1395

Glu Lys Val Val Leu Asp Tyr Ser Ser Asp Lys Leu Ile Leu Asp
1400 1405 1410

Gly Ser Phe Arg Gln Ser Ile Leu Ser Ser Ile Ala Arg Ala Gly
1415 1420 1425

Asn Glu Ile Glu Glu Leu Tyr Gly Thr Pro Gln Asp Ile Glu Gly
1430 1435 1440

Val Ile Lys Asp Gly Lys Val Tyr Val Val Gln Thr Arg Pro Gln
1445 1450 1455

Met

<210> 16

<211> 4846

<212> DNA

<213> zea mays

<220>

<221> CDS

<222> (158)..(4567)

<223>

<300>

<308> NCBI / AR400813

<309> 2003-12-18

<400> 16
ccacgcgtcc ggcttcatct tgctgatcgt gtccgtggct tcttgatact ccgtgactgt 60
ctccgtccga agcgagttag caagccgacc aacagcggtc gagattcgct gcaacgtcgg 120
tatcaaaagg tgcgtccgagcg gttgagattc gcgtgcc atg tcc gga ttc agt gcc 175
Met Ser Gly Phe Ser Ala
1 5
gca gca aac gca gca gca gca gct gag cgg tgc gca ctc gca ttc cgc gca 223
Ala Ala Asn Ala Ala Ala Ala Glu Arg Cys Ala Leu Ala Phe Arg Ala
10 15 20
cggtccccc gca gca tcc tcg cca gca aag cgg cag cag cag cag ccc 271
Arg Pro Ala Ala Ser Ser Pro Ala Lys Arg Gln Gln Gln Pro Gln Pro
25 30 35
gca tcc ctc cga cgc agc ggg ggc cag cgc cgc ccc acg acg ctc tcc 319
Ala Ser Leu Arg Arg Ser Gly Gly Gln Arg Arg Pro Thr Thr Leu Ser
40 45 50
gcc tct agc cgc ggc ccc gtc gtg ccg cgc gcc gtc gcc acg tcc gcg 367
Ala Ser Ser Arg Gly Pro Val Val Pro Arg Ala Val Ala Thr Ser Ala
55 60 65 70
gac cgc gca tcc ccc gac ctt atc gga aag ttc acg ctg gat tcc aac 415
Asp Arg Ala Ser Pro Asp Leu Ile Gly Lys Phe Thr Leu Asp Ser Asn
75 80 85
tcc gag ctc cag gtc gca gtg aac cca gca ccg cag ggt ttg gtg tca 463
Ser Glu Leu Gln Val Ala Val Asn Pro Ala Pro Gln Gly Leu Val Ser
90 95 100
gag att agc ctg gag gtg acc aac aca agc ggt tcc ctg att ttg cat 511
Glu Ile Ser Leu Glu Val Thr Asn Thr Ser Gly Ser Leu Ile Leu His
105 110 115
tgg gga gcc ctt cgc ccg gac aag aga gat tgg atc ctc ccg tcc aga 559
Trp Gly Ala Leu Arg Pro Asp Lys Arg Asp Trp Ile Leu Pro Ser Arg
120 125 130
aaa cct gat gga acg aca gtg tac aag aac agg gct ctc agg aca cct 607
Lys Pro Asp Gly Thr Thr Val Tyr Lys Asn Arg Ala Leu Arg Thr Pro
135 140 145 150
ttt gta aag tca ggt gat aac tcc act cta agg att gag ata gat gat 655
Phe Val Lys Ser Gly Asp Asn Ser Thr Leu Arg Ile Glu Ile Asp Asp
155 160 165

cct	ggg	gtg	cac	gcc	att	gag	ttc	ctc	atc	ttt	gac	gag	aca	cag	aac	703
Pro	Gly	Val	His	Ala	Ile	Glu	Phe	Leu	Ile	Phe	Asp	Glu	Thr	Gln	Asn	
170					175							180				
aaa	tgg	ttt	aaa	aac	aat	ggc	cag	aat	ttt	cag	gtt	cag	ttc	cag	tcg	751
Lys	Trp	Phe	Lys	Asn	Asn	Gly	Gln	Asn	Phe	Gln	Val	Gln	Phe	Gln	Ser	
185					190							195				
agc	cgc	cat	cag	ggt	act	ggt	gca	tct	ggt	gcc	tcc	tct	tct	gct	act	799
Ser	Arg	His	Gln	Gly	Thr	Gly	Ala	Ser	Gly	Ala	Ser	Ser	Ser	Ala	Thr	
200					205						210					
tct	acc	ttg	gtg	cca	gag	gat	ctt	gtg	cag	atc	caa	gct	tac	ctt	cgg	847
Ser	Thr	Leu	Val	Pro	Glu	Asp	Leu	Val	Gln	Ile	Gln	Ala	Tyr	Leu	Arg	
215					220						225				230	
tgg	gaa	aga	agg	gga	aag	cag	tca	tac	aca	cca	gag	caa	gaa	aag	gag	895
Trp	Glu	Arg	Arg	Gly	Lys	Gln	Ser	Tyr	Thr	Pro	Glu	Gln	Glu	Lys	Glu	
235					240									245		
gag	tat	gaa	gct	gca	cga	gct	gag	tta	ata	gag	gaa	gta	aac	aga	ggt	943
Glu	Tyr	Glu	Ala	Ala	Arg	Ala	Glu	Leu	Ile	Glu	Glu	Val	Asn	Arg	Gly	
250					255							260				
gtt	tct	tta	gag	aag	ctt	cga	gct	aaa	ttg	aca	aaa	gca	cct	gaa	gca	991
Val	Ser	Leu	Glu	Lys	Leu	Arg	Ala	Lys	Leu	Thr	Lys	Ala	Pro	Glu	Ala	
265					270							275				
cct	gag	tcg	gat	gaa	agt	aaa	tct	tct	gca	tct	cga	atg	ccc	atc	ggt	1039
Pro	Glu	Ser	Asp	Glu	Ser	Lys	Ser	Ser	Ala	Ser	Arg	Met	Pro	Ile	Gly	
280					285						290					
aaa	ctt	cca	gag	gat	ctt	gta	cag	gtg	cag	gct	tat	ata	agg	tgg	gag	1087
Lys	Leu	Pro	Glu	Asp	Leu	Val	Gln	Val	Gln	Ala	Tyr	Ile	Arg	Trp	Glu	
295					300						305				310	
caa	gcg	ggc	aag	cca	aac	tat	cct	cct	gag	aag	caa	ctg	gta	gaa	ttt	1135
Gln	Ala	Gly	Lys	Pro	Asn	Tyr	Pro	Pro	Glu	Lys	Gln	Leu	Val	Glu	Phe	
315					320									325		
gag	gaa	gca	agg	aag	gaa	ctg	cag	gct	gag	gtg	gac	aag	gga	atc	tct	1183
Glu	Glu	Ala	Arg	Lys	Glu	Leu	Gln	Ala	Glu	Val	Asp	Lys	Gly	Ile	Ser	
330					335							340				
att	gat	cag	ttg	agg	cag	aaa	att	ttg	aaa	gga	aac	att	gag	agt	aaa	1231
Ile	Asp	Gln	Leu	Arg	Gln	Lys	Ile	Leu	Lys	Gly	Asn	Ile	Glu	Ser	Lys	
345					350							355				
gtt	tcc	aag	cag	ctg	aag	aac	aag	aag	tac	ttc	tct	gta	gaa	agg	att	1279
Val	Ser	Lys	Gln	Leu	Lys	Asn	Lys	Lys	Tyr	Phe	Ser	Val	Glu	Arg	Ile	
360					365						370					
cag	cgc	aaa	aag	aga	gat	atc	aca	caa	ctt	ctc	agt	aaa	cat	aag	cat	1327
Gln	Arg	Lys	Lys	Arg	Asp	Ile	Thr	Gln	Leu	Leu	Ser	Lys	His	Lys	His	
375					380						385				390	
aca	ctt	gtg	gaa	gat	aaa	gta	gag	gtt	gta	cca	aaa	caa	cca	act	gtt	1375
Thr	Leu	Val	Glu	Asp	Lys	Val	Glu	Val	Val	Pro	Lys	Gln	Pro	Thr	Val	
395					400									405		
ctt	gat	ctc	ttc	acc	aag	tct	tta	cat	gag	aag	gat	ggc	tgt	gaa	gtt	1423
Leu	Asp	Leu	Phe	Thr	Lys	Ser	Leu	His	Glu	Lys	Asp	Gly	Cys	Glu	Val	
410					415							420				

cta agc aga aag ctc ttc aag ttc ggc gat aaa gag ata ctg gca att Leu Ser Arg Lys Leu Phe Lys Phe Gly Asp Lys Glu Ile Leu Ala Ile 425 430 435	1471
tct acc aag gtt caa aat aaa aca gaa gtt cac ttg gca aca aac cat Ser Thr Lys Val Gln Asn Lys Thr Glu Val His Leu Ala Thr Asn His 440 445 450	1519
acc gac cca ctt att ctt cac tgg tct ttg gca aaa aat gct gga gaa Thr Asp Pro Leu Ile Leu His Trp Ser Leu Ala Lys Asn Ala Gly Glu 455 460 465 470	1567
tgg aag gca cct tct cca aat ata ttg cca tct ggt tcc aca ttg ctg Trp Lys Ala Pro Ser Pro Asn Ile Leu Pro Ser Gly Ser Thr Leu Leu 475 480 485	1615
gac aag gcg tgt gaa act gaa ttt act aaa tct gaa ttg gat ggt ttg Asp Lys Ala Cys Glu Thr Glu Phe Thr Lys Ser Glu Leu Asp Gly Leu 490 495 500	1663
cat tac cag gtt gtt gag ata gag ctt gat gat gga gga tac aaa gga His Tyr Gln Val Val Glu Ile Glu Leu Asp Asp Gly Gly Tyr Lys Gly 505 510 515	1711
atg cca ttt gtt ctt cg ^g tct ggt gaa aca ttg aaa aaa aat aat ggt Met Pro Phe Val Leu Arg Ser Gly Glu Thr Trp Lys Lys Asn Asn Gly 520 525 530	1759
tct gat ttt ttc cta gat ttc agc acc cat gat gtc aga aat att aag Ser Asp Phe Phe Leu Asp Phe Ser Thr His Asp Val Arg Asn Ile Lys 535 540 545 550	1807
tta aag ggc aat ggt gat gct ggt aaa ggt act gct aag gca ttg ctg Leu Lys Gly Asn Gly Asp Ala Gly Lys Gly Thr Ala Lys Ala Leu Leu 555 560 565	1855
gag aga ata gca gat ctg gag gaa gat gcc cag cga tct ctt atg cac Glu Arg Ile Ala Asp Leu Glu Glu Asp Ala Gln Arg Ser Leu Met His 570 575 580	1903
aga ttc aat att gca gca gat cta gct gac caa gcc aga gat gct gga Arg Phe Asn Ile Ala Asp Leu Ala Asp Gln Ala Arg Asp Ala Gly 585 590 595	1951
ctt ttg ggt att gtt ggg ctt ttt gtt ttg att aga ttc atg gct acc Leu Leu Gly Ile Val Gly Leu Phe Val Trp Ile Arg Phe Met Ala Thr 600 605 610	1999
agg caa cta aca tgg aat aag aac tat aat gtg aag cca cgt gag ata Arg Gln Leu Thr Trp Asn Lys Asn Tyr Asn Val Lys Pro Arg Glu Ile 615 620 625 630	2047
agc aaa gca cag gat agg ttt aca gat gat ctt gag aat atg tac aaa Ser Lys Ala Gln Asp Arg Phe Thr Asp Asp Leu Glu Asn Met Tyr Lys 635 640 645	2095
gct tat cca cag tac aga gag ata tta aga atg ata atg gct gct gtt Ala Tyr Pro Gln Tyr Arg Glu Ile Leu Arg Met Ile Met Ala Ala Val 650 655 660	2143
ggt cgc gga ggt gaa ggt gat gtt ggt caa cgc att cgt gat gag ata Gly Arg Gly Gly Glu Gly Asp Val Gly Gln Arg Ile Arg Asp Glu Ile 665 670 675	2191

tta gta ata cag aga aat aat gac tgc aaa ggt gga atg atg gaa gaa Leu Val Ile Gln Arg Asn Asn Asp Cys Lys Gly Gly Met Met Glu Glu 680 685 690	2239
tgg cac cag aaa ttg cac aac aat aca agc cca gat gat gta gtg ata Trp His Gln Lys Leu His Asn Asn Thr Ser Pro Asp Asp Val Val Ile 695 700 705 710	2287
tgc cag gcc tta att gat tat atc aag agt gac ttt gat ata agc gtt Cys Gln Ala Leu Ile Asp Tyr Ile Lys Ser Asp Phe Asp Ile Ser Val 715 720 725	2335
tac tgg gac acc ttg aac aaa aat ggc ata acc aaa gag cgt ctc ttg Tyr Trp Asp Thr Leu Asn Lys Asn Gly Ile Thr Lys Glu Arg Leu Leu 730 735 740	2383
agc tat gat cgt gct att cat tca gaa cca aat ttc aga agt gaa cag Ser Tyr Asp Arg Ala Ile His Ser Glu Pro Asn Phe Arg Ser Glu Gln 745 750 755	2431
aag gcg ggt tta ctc cgt gac ctg gga aat tac atg aga agt gaa cag Lys Ala Gly Leu Leu Arg Asp Leu Gly Asn Tyr Met Arg Ser Leu Lys 760 765 770	2479
gct gtg cat tct ggt gct gat ctt gaa tct gct ata gca agt tgt atg Ala Val His Ser Gly Ala Asp Leu Glu Ser Ala Ile Ala Ser Cys Met 775 780 785 790	2527
gga tac aaa tca gag ggt gaa ggt ttc atg gtt ggt gtt cag atc aat Gly Tyr Lys Ser Glu Gly Glu Gly Phe Met Val Gly Val Gln Ile Asn 795 800 805	2575
cca gtg aag ggt tta cca tct gga ttt ccg gag ttg ctt gaa ttt gtg Pro Val Lys Gly Leu Pro Ser Gly Phe Pro Glu Leu Leu Glu Phe Val 810 815 820	2623
ctt gaa cat gtt gag gat aaa tca gcg gaa cca ctt ctt gag ggg cta Leu Glu His Val Glu Asp Lys Ser Ala Glu Pro Leu Leu Glu Gly Leu 825 830 835	2671
ttg gaa gct cga gtt gaa ctg cgc cct ttg ctt ctt gat tcg cgt gaa Leu Glu Ala Arg Val Glu Leu Arg Pro Leu Leu Leu Asp Ser Arg Glu 840 845 850	2719
cgc atg aaa gat ctt ata ttt ttg gac att gct ctt gat tct acc ttc Arg Met Lys Asp Leu Ile Phe Leu Asp Ile Ala Leu Asp Ser Thr Phe 855 860 865 870	2767
agg aca gca att gaa agg tca tat gag gag ctg aat gat gca gcc cca Arg Thr Ala Ile Glu Arg Ser Tyr Glu Glu Leu Asn Asp Ala Ala Pro 875 880 885	2815
gag aaa ata atg tac ttc atc agt ctt gtc ctt gaa aat ctt gcg ctt Glu Lys Ile Met Tyr Phe Ile Ser Leu Val Leu Glu Asn Leu Ala Leu 890 895 900	2863
tca att gac gac aat gaa gac atc ctg tat tgt tta aag gga tgg aac Ser Ile Asp Asp Asn Glu Asp Ile Leu Tyr Cys Leu Lys Gly Trp Asn 905 910 915	2911
caa gcc ttg gaa atg gct aag caa aaa gac gac caa tgg gcg ctc tat Gln Ala Leu Glu Met Ala Lys Gln Lys Asp Asp Gln Trp Ala Leu Tyr 920 925 930	2959

gct aaa gca ttt ctt gac aga aac aga ctt gcc ctt gcg agc aag gga Ala Lys Ala Phe Leu Asp Arg Asn Arg Leu Ala Leu Ala Ser Lys Gly 935 940 945 950	3007
gaa caa tac cat aat atg atg cag ccc tct gct gag tat ctt ggc tcg Glu Gln Tyr His Asn Met Met Gln Pro Ser Ala Glu Tyr Leu Gly Ser 955 960 965	3055
tta ctc agc ata gac caa tgg gca gtc aat atc ttc aca gaa gaa att Leu Leu Ser Ile Asp Gln Trp Ala Val Asn Ile Phe Thr Glu Glu Ile 970 975 980	3103
ata cgc ggt gga tca gct act ctg tct gct ctt ctg aac cga ttt Ile Arg Gly Gly Ser Ala Ala Thr Leu Ser Ala Leu Leu Asn Arg Phe 985 990 995	3151
gat cct gtt tta agg aat gtt gct cac ctc gga agt tgg cag gtt Asp Pro Val Leu Arg Asn Val Ala His Leu Gly Ser Trp Gln Val 1000 1005 1010	3196
ata agc ccg gtt gaa gta tca ggt tat gtg gtt gtg gtt gat gag Ile Ser Pro Val Glu Val Ser Gly Tyr Val Val Val Asp Glu 1015 1020 1025	3241
tta ctt gct gtc cag aac aaa tct tat gat aaa cca acc atc ctt Leu Leu Ala Val Gln Asn Lys Ser Tyr Asp Lys Pro Thr Ile Leu 1030 1035 1040	3286
gtg gca aag agt gtc aag gga gag gaa gaa ata cca gat gga gta Val Ala Lys Ser Val Lys Gly Glu Glu Glu Ile Pro Asp Gly Val 1045 1050 1055	3331
gtt ggt gta att aca cct gat atg cca gat gtt ctg tct cat gtg Val Gly Val Ile Thr Pro Asp Met Pro Asp Val Leu Ser His Val 1060 1065 1070	3376
tca gtc cga gca agg aat agc aag gta ctg ttt gcg acc tgt ttt Ser Val Arg Ala Arg Asn Ser Lys Val Leu Phe Ala Thr Cys Phe 1075 1080 1085	3421
gac cac acc act cta tct gaa ctt gaa gga tat gat cag aaa ctg Asp His Thr Thr Leu Ser Glu Leu Glu Gly Tyr Asp Gln Lys Leu 1090 1095 1100	3466
ttt tcc ttc aag cct act tct gca gat ata acc tat agg gag atc Phe Ser Phe Lys Pro Thr Ser Ala Asp Ile Thr Tyr Arg Glu Ile 1105 1110 1115	3511
aca gag agt gaa ctt cag caa tca agt tct cca aat gca gaa gtt Thr Glu Ser Glu Leu Gln Gln Ser Ser Ser Pro Asn Ala Glu Val 1120 1125 1130	3556
ggc cat gca gta cca tct att tca ttg gcc aag aag aaa ttt ctt Gly His Ala Val Pro Ser Ile Ser Leu Ala Lys Lys Lys Phe Leu 1135 1140 1145	3601
gga aaa tat gca ata tca gcc gaa gaa ttc tct gag gaa atg gtt Gly Lys Tyr Ala Ile Ser Ala Glu Glu Phe Ser Glu Glu Met Val 1150 1155 1160	3646
ggg gcc aag tct cgg aat ata gca tac ctc aaa gga aaa gta cct Gly Ala Lys Ser Arg Asn Ile Ala Tyr Leu Lys Gly Lys Val Pro 1165 1170 1175	3691

tca	tgg	gtc	ggt	gtc	cca	acg	tca	gtt	gct	ata	cca	ttt	ggc	act	3736
Ser	Trp	Val	Gly	Val	Pro	Thr	Ser	Val	Ala	Ile	Pro	Phe	Gly	Thr	
1180					1185						1190				
ttt	gag	aag	gtt	ttg	tca	gat	ggg	ctt	aat	aag	gaa	gta	gca	cag	3781
Phe	Glu	Lys	Val	Leu	Ser	Asp	Gly	Leu	Asn	Lys	Glu	Val	Ala	Gln	
1195					1200						1205				
agc	ata	gag	aag	ctt	aag	atc	aga	ctt	gcc	caa	gaa	gat	ttt	agt	3826
Ser	Ile	Glu	Lys	Leu	Lys	Ile	Arg	Leu	Ala	Gln	Glu	Asp	Phe	Ser	
1210					1215						1220				
gct	cta	ggt	gaa	ata	aga	aaa	gtc	gtc	ctt	aat	ctt	act	gct	cct	3871
Ala	Leu	Gly	Glu	Ile	Arg	Lys	Val	Val	Leu	Asn	Leu	Thr	Ala	Pro	
1225					1230						1235				
atg	caa	ttg	gtt	aat	gag	ctg	aag	gag	agg	atg	cta	ggc	tct	gga	3916
Met	Gln	Leu	Val	Asn	Glu	Leu	Lys	Glu	Arg	Met	Leu	Gly	Ser	Gly	
1240					1245						1250				
atg	ccc	tgg	cct	ggt	gat	gaa	gga	gac	aag	cgt	tgg	gag	caa	gca	3961
Met	Pro	Trp	Pro	Gly	Asp	Glu	Gly	Asp	Lys	Arg	Trp	Glu	Gln	Ala	
1255					1260						1265				
tgg	atg	gct	att	aaa	aag	gtt	tgg	gca	tca	aaa	tgg	aac	gaa	aga	4006
Trp	Met	Ala	Ile	Lys	Lys	Val	Trp	Ala	Ser	Lys	Trp	Asn	Glu	Arg	
1270					1275						1280				
gca	tat	ttt	agc	aca	cgc	aag	gtg	aaa	ctt	gat	cat	gag	tac	ctt	4051
Ala	Tyr	Phe	Ser	Thr	Arg	Lys	Val	Lys	Leu	Asp	His	Glu	Tyr	Leu	
1285					1290						1295				
tcg	atg	gct	gtt	ctc	gtg	caa	gaa	gtt	gtg	aat	gca	gat	tat	gct	4096
Ser	Met	Ala	Val	Leu	Val	Gln	Glu	Val	Val	Asn	Ala	Asp	Tyr	Ala	
1300					1305						1310				
ttt	gtc	att	cat	acc	aca	aac	cca	tcg	tct	gga	gat	tct	tct	gag	4141
Phe	Val	Ile	His	Thr	Thr	Asn	Pro	Ser	Ser	Gly	Asp	Ser	Ser	Glu	
1315					1320						1325				
ata	tat	gct	gaa	gtg	gtg	aaa	ggg	ctt	ggc	gag	acc	ctc	gtg	gga	4186
Ile	Tyr	Ala	Glu	Val	Val	Lys	Gly	Leu	Gly	Glu	Thr	Leu	Val	Gly	
1330					1335						1340				
gcc	tat	cct	ggt	cgt	gct	atg	agc	ttt	gtt	tgc	aaa	aaa	gat	gac	4231
Ala	Tyr	Pro	Gly	Arg	Ala	Met	Ser	Phe	Val	Cys	Lys	Lys	Asp	Asp	
1345					1350						1355				
ctt	gac	tct	ccc	aag	tta	ctt	ggt	tac	cca	agc	aag	cca	att	ggt	4276
Leu	Asp	Ser	Pro	Lys	Leu	Leu	Gly	Tyr	Pro	Ser	Lys	Pro	Ile	Gly	
1360					1365						1370				
ctc	ttc	ata	agg	caa	tca	atc	atc	ttc	cgt	tcc	gac	tcc	aac	ggt	4321
Leu	Phe	Ile	Arg	Gln	Ser	Ile	Ile	Phe	Arg	Ser	Asp	Ser	Asn	Gly	
1375					1380						1385				
gag	gac	ctg	gaa	ggt	tat	gct	gga	gca	gga	tta	tat	gat	agt	gta	4366
Glu	Asp	Leu	Glu	Gly	Tyr	Ala	Gly	Ala	Gly	Leu	Tyr	Asp	Ser	Val	
1390					1395						1400				
ccg	atg	gat	gag	gag	gat	gag	gtt	gta	ctt	gat	tat	aca	act	gac	4411
Pro	Met	Asp	Glu	Glu	Asp	Glu	Val	Val	Leu	Asp	Tyr	Thr	Thr	Asp	
1405					1410						1415				

cct ctt ata gta gac cgt gga ttc cga agc tca atc ctc tca agc Pro Leu Ile Val Asp Arg Gly Phe Arg Ser Ser Ile Leu Ser Ser 1420 1425 1430	4456
ata gca cg gct ggc cat gcc atc gag gag cta tat ggt tct cct Ile Ala Arg Ala Gly His Ala Ile Glu Glu Leu Tyr Gly Ser Pro 1435 1440 1445	4501
cag gac gtc gag gga gta gtg aag gat gga aaa atc tat gta gtc Gln Asp Val Glu Gly Val Val Lys Asp Gly Lys Ile Tyr Val Val 1450 1455 1460	4546
cag aca aga cca cag atg tag tatgtatgca tctattagac agctcaataa Gln Thr Arg Pro Gln Met 1465	4597
gcactgttgt acgcttgtat ggttggaca tatggcggtt atggcatgta tagttgtatg cctagatgta caacacgtgt actcgatata atatataaa atgctgaaac aagcattgg cctgtactgt agtttctaca tttcattgtc accaataatt aagtgtactc ctatggctgg gagtctatga aaatggacgt gttgacttat tggtaataa ataatttata taaaaaaaaa aaaaaaaaag	4657 4717 4777 4837 4846

<210> 17

<211> 1469

<212> PRT

<213> Zea mays

<400> 17

Met Ser Gly Phe Ser Ala Ala Ala Asn Ala Ala Ala Ala Glu Arg Cys
1 5 10 15

Ala Leu Ala Phe Arg Ala Arg Pro Ala Ala Ser Ser Pro Ala Lys Arg
20 25 30

Gln Gln Gln Pro Gln Pro Ala Ser Leu Arg Arg Ser Gly Gly Gln Arg
35 40 45

Arg Pro Thr Thr Leu Ser Ala Ser Ser Arg Gly Pro Val Val Pro Arg
50 55 60

Ala Val Ala Thr Ser Ala Asp Arg Ala Ser Pro Asp Leu Ile Gly Lys
65 70 75 80

Phe Thr Leu Asp Ser Asn Ser Glu Leu Gln Val Ala Val Asn Pro Ala
85 90 95

Pro Gln Gly Leu Val Ser Glu Ile Ser Leu Glu Val Thr Asn Thr Ser
Page 91

100

105

110

Gly Ser Leu Ile Leu His Trp Gly Ala Leu Arg Pro Asp Lys Arg Asp
115 120 125

Trp Ile Leu Pro Ser Arg Lys Pro Asp Gly Thr Thr Val Tyr Lys Asn
130 135 140

Arg Ala Leu Arg Thr Pro Phe Val Lys Ser Gly Asp Asn Ser Thr Leu
145 150 155 160

Arg Ile Glu Ile Asp Asp Pro Gly Val His Ala Ile Glu Phe Leu Ile
165 170 175

Phe Asp Glu Thr Gln Asn Lys Trp Phe Lys Asn Asn Gly Gln Asn Phe
180 185 190

Gln Val Gln Phe Gln Ser Ser Arg His Gln Gly Thr Gly Ala Ser Gly
195 200 205

Ala Ser Ser Ser Ala Thr Ser Thr Leu Val Pro Glu Asp Leu Val Gln
210 215 220

Ile Gln Ala Tyr Leu Arg Trp Glu Arg Arg Gly Lys Gln Ser Tyr Thr
225 230 235 240

Pro Glu Gln Glu Lys Glu Glu Tyr Glu Ala Ala Arg Ala Glu Leu Ile
245 250 255

Glu Glu Val Asn Arg Gly Val Ser Leu Glu Lys Leu Arg Ala Lys Leu
260 265 270

Thr Lys Ala Pro Glu Ala Pro Glu Ser Asp Glu Ser Lys Ser Ser Ala
275 280 285

Ser Arg Met Pro Ile Gly Lys Leu Pro Glu Asp Leu Val Gln Val Gln
290 295 300

Ala Tyr Ile Arg Trp Glu Gln Ala Gly Lys Pro Asn Tyr Pro Pro Glu
305 310 315 320

Lys Gln Leu Val Glu Phe Glu Glu Ala Arg Lys Glu Leu Gln Ala Glu
325 330 335

Val Asp Lys Gly Ile Ser Ile Asp Gln Leu Arg Gln Lys Ile Leu Lys
340 345 350

Gly Asn Ile Glu Ser Lys Val Ser Lys Gln Leu Lys Asn Lys Lys Tyr
Page 92

355

360

365

Phe Ser Val Glu Arg Ile Gln Arg Lys Lys Arg Asp Ile Thr Gln Leu
370 375 380 385

Leu Ser Lys His Lys His Thr Leu Val Glu Asp Lys Val Glu Val Val
385 390 395 400

Pro Lys Gln Pro Thr Val Leu Asp Leu Phe Thr Lys Ser Leu His Glu
405 410 415

Lys Asp Gly Cys Glu Val Leu Ser Arg Lys Leu Phe Lys Phe Gly Asp
420 425 430

Lys Glu Ile Leu Ala Ile Ser Thr Lys Val Gln Asn Lys Thr Glu Val
435 440 445

His Leu Ala Thr Asn His Thr Asp Pro Leu Ile Leu His Trp Ser Leu
450 455 460

Ala Lys Asn Ala Gly Glu Trp Lys Ala Pro Ser Pro Asn Ile Leu Pro
465 470 475 480

Ser Gly Ser Thr Leu Leu Asp Lys Ala Cys Glu Thr Glu Phe Thr Lys
485 490 495

Ser Glu Leu Asp Gly Leu His Tyr Gln Val Val Glu Ile Glu Leu Asp
500 505 510

Asp Gly Gly Tyr Lys Gly Met Pro Phe Val Leu Arg Ser Gly Glu Thr
515 520 525

Trp Lys Lys Asn Asn Gly Ser Asp Phe Phe Leu Asp Phe Ser Thr His
530 535 540

Asp Val Arg Asn Ile Lys Leu Lys Gly Asn Gly Asp Ala Gly Lys Gly
545 550 555 560

Thr Ala Lys Ala Leu Leu Glu Arg Ile Ala Asp Leu Glu Glu Asp Ala
565 570 575

Gln Arg Ser Leu Met His Arg Phe Asn Ile Ala Ala Asp Leu Ala Asp
580 585 590

Gln Ala Arg Asp Ala Gly Leu Leu Gly Ile Val Gly Leu Phe Val Trp
595 600 605

Ile Arg Phe Met Ala Thr Arg Gln Leu Thr Trp Asn Lys Asn Tyr Asn

610

615

620

Val Lys Pro Arg Glu Ile Ser Lys Ala Gln Asp Arg Phe Thr Asp Asp
625 630 635 640

Leu Glu Asn Met Tyr Lys Ala Tyr Pro Gln Tyr Arg Glu Ile Leu Arg
645 650 655

Met Ile Met Ala Ala Val Gly Arg Gly Glu Gly Asp Val Gly Gln
660 665 670

Arg Ile Arg Asp Glu Ile Leu Val Ile Gln Arg Asn Asn Asp Cys Lys
675 680 685

Gly Gly Met Met Glu Glu Trp His Gln Lys Leu His Asn Asn Thr Ser
690 695 700

Pro Asp Asp Val Val Ile Cys Gln Ala Leu Ile Asp Tyr Ile Lys Ser
705 710 715 720

Asp Phe Asp Ile Ser Val Tyr Trp Asp Thr Leu Asn Lys Asn Gly Ile
725 730 735

Thr Lys Glu Arg Leu Leu Ser Tyr Asp Arg Ala Ile His Ser Glu Pro
740 745 750

Asn Phe Arg Ser Glu Gln Lys Ala Gly Leu Leu Arg Asp Leu Gly Asn
755 760 765

Tyr Met Arg Ser Leu Lys Ala Val His Ser Gly Ala Asp Leu Glu Ser
770 775 780

Ala Ile Ala Ser Cys Met Gly Tyr Lys Ser Glu Gly Glu Gly Phe Met
785 790 795 800

Val Gly Val Gln Ile Asn Pro Val Lys Gly Leu Pro Ser Gly Phe Pro
805 810 815

Glu Leu Leu Glu Phe Val Leu Glu His Val Glu Asp Lys Ser Ala Glu
820 825 830

Pro Leu Leu Glu Gly Leu Leu Glu Ala Arg Val Glu Leu Arg Pro Leu
835 840 845

Leu Leu Asp Ser Arg Glu Arg Met Lys Asp Leu Ile Phe Leu Asp Ile
850 855 860

Ala Leu Asp Ser Thr Phe Arg Thr Ala Ile Glu Arg Ser Tyr Glu Glu

865 870 875 880
Leu Asn Asp Ala Ala Pro Glu Lys Ile Met Tyr Phe Ile Ser Leu Val
885 890 895

Leu Glu Asn Leu Ala Leu Ser Ile Asp Asp Asn Glu Asp Ile Leu Tyr
900 905 910

Cys Leu Lys Gly Trp Asn Gln Ala Leu Glu Met Ala Lys Gln Lys Asp
915 920 925

Asp Gln Trp Ala Leu Tyr Ala Lys Ala Phe Leu Asp Arg Asn Arg Leu
930 935 940

Ala Leu Ala Ser Lys Gly Glu Gln Tyr His Asn Met Met Gln Pro Ser
945 950 955 960

Ala Glu Tyr Leu Gly Ser Leu Leu Ser Ile Asp Gln Trp Ala Val Asn
965 970 975

Ile Phe Thr Glu Glu Ile Ile Arg Gly Gly Ser Ala Ala Thr Leu Ser
980 985 990

Ala Leu Leu Asn Arg Phe Asp Pro Val Leu Arg Asn Val Ala His Leu
995 1000 1005

Gly Ser Trp Gln Val Ile Ser Pro Val Glu Val Ser Gly Tyr Val
1010 1015 1020

Val Val Val Asp Glu Leu Leu Ala Val Gln Asn Lys Ser Tyr Asp
1025 1030 1035

Lys Pro Thr Ile Leu Val Ala Lys Ser Val Lys Gly Glu Glu Glu
1040 1045 1050

Ile Pro Asp Gly Val Val Gly Val Ile Thr Pro Asp Met Pro Asp
1055 1060 1065

Val Leu Ser His Val Ser Val Arg Ala Arg Asn Ser Lys Val Leu
1070 1075 1080

Phe Ala Thr Cys Phe Asp His Thr Thr Leu Ser Glu Leu Glu Gly
1085 1090 1095

Tyr Asp Gln Lys Leu Phe Ser Phe Lys Pro Thr Ser Ala Asp Ile
1100 1105 1110

Thr Tyr Arg Glu Ile Thr Glu Ser Glu Leu Gln Gln Ser Ser Ser

1115

1120

1125

Pro Asn Ala Glu Val Gly His Ala Val Pro Ser Ile Ser Leu Ala
1130 1135 1140

Lys Lys Lys Phe Leu Gly Lys Tyr Ala Ile Ser Ala Glu Glu Phe
1145 1150 1155

Ser Glu Glu Met Val Gly Ala Lys Ser Arg Asn Ile Ala Tyr Leu
1160 1165 1170

Lys Gly Lys Val Pro Ser Trp Val Gly Val Pro Thr Ser Val Ala
1175 1180 1185

Ile Pro Phe Gly Thr Phe Glu Lys Val Leu Ser Asp Gly Leu Asn
1190 1195 1200

Lys Glu Val Ala Gln Ser Ile Glu Lys Leu Lys Ile Arg Leu Ala
1205 1210 1215

Gln Glu Asp Phe Ser Ala Leu Gly Glu Ile Arg Lys Val Val Leu
1220 1225 1230

Asn Leu Thr Ala Pro Met Gln Leu Val Asn Glu Leu Lys Glu Arg
1235 1240 1245

Met Leu Gly Ser Gly Met Pro Trp Pro Gly Asp Glu Gly Asp Lys
1250 1255 1260

Arg Trp Glu Gln Ala Trp Met Ala Ile Lys Lys Val Trp Ala Ser
1265 1270 1275

Lys Trp Asn Glu Arg Ala Tyr Phe Ser Thr Arg Lys Val Lys Leu
1280 1285 1290

Asp His Glu Tyr Leu Ser Met Ala Val Leu Val Gln Glu Val Val
1295 1300 1305

Asn Ala Asp Tyr Ala Phe Val Ile His Thr Thr Asn Pro Ser Ser
1310 1315 1320

Gly Asp Ser Ser Glu Ile Tyr Ala Glu Val Val Lys Gly Leu Gly
1325 1330 1335

Glu Thr Leu Val Gly Ala Tyr Pro Gly Arg Ala Met Ser Phe Val
1340 1345 1350

Cys Lys Lys Asp Asp Leu Asp Ser Pro Lys Leu Leu Gly Tyr Pro
Page 96

1355

1360

1365

Ser Lys Pro Ile Gly Leu Phe Ile Arg Gln Ser Ile Ile Phe Arg
1370 1375 1380

Ser Asp Ser Asn Gly Glu Asp Leu Glu Gly Tyr Ala Gly Ala Gly
1385 1390 1395

Leu Tyr Asp Ser Val Pro Met Asp Glu Glu Asp Glu Val Val Leu
1400 1405 1410

Asp Tyr Thr Thr Asp Pro Leu Ile Val Asp Arg Gly Phe Arg Ser
1415 1420 1425

Ser Ile Leu Ser Ser Ile Ala Arg Ala Gly His Ala Ile Glu Glu
1430 1435 1440

Leu Tyr Gly Ser Pro Gln Asp Val Glu Gly Val Val Lys Asp Gly
1445 1450 1455

Lys Ile Tyr Val Val Gln Thr Arg Pro Gln Met
1460 1465

<210> 18

<211> 27

<212> DNA

<213> Synthetic

<400> 18

gactcaacca cataacacac aaagatc

27

<210> 19

<211> 21

<212> DNA

<213> Synthetic

<400> 19

tggtaacgag gcaaatgcag a

21

<210> 20

<211> 25

<212> DNA

<213> Synthetic

<400> 20

atctcttatac acaccacctc caatg

25

<210> 21

<211> 24

<212> DNA

<213> Synthetic

<400> 21

ggaaccgata atgcctacat gctc	24
<210> 22	
<211> 39	
<212> DNA	
<213> Synthetic	
<400> 22	
aaaactcgag gaggatcaat gacgtcgctg cggcccctc	39
<210> 23	
<211> 21	
<212> DNA	
<213> Synthetic	
<400> 23	
ccaggttaag tttggtgagc a	21
<210> 24	
<211> 22	
<212> DNA	
<213> Synthetic	
<400> 24	
caaagcacga tatctgacct gt	22
<210> 25	
<211> 22	
<212> DNA	
<213> Synthetic	
<400> 25	
ttgttcgcgg gatattgtca ga	22
<210> 26	
<211> 24	
<212> DNA	
<213> Synthetic	
<400> 26	
gacaaggcga tcaagagtatc	24
<210> 27	
<211> 20	
<212> DNA	
<213> Synthetic	
<400> 27	
atgatgcgcc tgataatgct	20
<210> 28	
<211> 21	
<212> DNA	
<213> Synthetic	
<400> 28	
ggcaaacagt atgaagcacg a	21

<210> 29
<211> 21
<212> DNA
<213> Synthetic

<400> 29
catttggatc aatggaggat g

21

<210> 30
<211> 23
<212> DNA
<213> Synthetic

<400> 30
ctatggctgt ggcctgcttt gca

23

<210> 31
<211> 33
<212> DNA
<213> Synthetic

<400> 31
aaaactcgag ctatggctgt ggcctgcttt gca

33

<210> 32
<211> 63
<212> DNA
<213> Synthetic

<400> 32
tgcaggctgc agagctccta ggctcgagtt aacactagta agcttaatta agatatcatt 60
tac 63

<210> 33
<211> 67
<212> DNA
<213> Synthetic

<400> 33
aattgtaaat gatatcttaa ttaagcttac tagtgttaac tcgagcctag gagctctgca 60
gcctgca 67

<210> 34
<211> 47
<212> DNA
<213> Synthetic

<400> 34
acttctgcag cggccgcgat cgttcaaaca tttggcaata aagtttc

47

<210> 35
<211> 50
<212> DNA
<213> Synthetic

<400> 35

tctaaagcttg	gccccgtag	cagatctgat	ctagtaacat	agatgacacc	50
<210>	36				
<211>	38				
<212>	DNA				
<213>	Synthetic				
<400>	36				
ttttgcgcg	cgttaattaa	cgactcacta	tagggcga		38
<210>	37				
<211>	41				
<212>	DNA				
<213>	Synthetic				
<400>	37				
ttttgcgcg	cttaattaac	cctcactaaa	gggaacaaaa	g	41
<210>	38				
<211>	28				
<212>	DNA				
<213>	Synthetic				
<400>	38				
aaaacaattg	gcgcctggag	ggaggaga			28
<210>	39				
<211>	35				
<212>	DNA				
<213>	Synthetic				
<400>	39				
aaaacaattg	atgatcaatc	agacaatcac	tagaa		35